

BEFORE SUBMITTING YOUR BID

- 1. Use pen and ink to complete the Bid.**
- 2. Have you signed and completed the Contract Agreement, Offer & Award Forms?**
- 3. As a minimum, the Bidder will submit a Bid Package consisting of the Notice to Contractors, the completed Acknowledgement of Bid Amendments & Submission of Bid Bond Validation Number form, the completed Schedule of Items, 2 copies of the completed Agreement, Offer, & Award form, a Bid Bond or Bid Guarantee, and any other Certifications or Bid Requirements listed in the Bid Book.**
- 4. Have you included prices for all Bid Items? (“Zero is not considered a bid price.”)**
- 5. Have you included a bid guarantee? Acceptable forms are:**
 - A. Bid Bond on the Department’s prescribed form for 5% of the Bid Amount. (Or forms that do not contain any significant variations from the Department’s forms as solely determined by the Department.)**
 - B. Official Bank Check, Cashier’s Check, Certified Check, U.S. Postal Money Order or Negotiable Certificate of Deposit in the amount stated in the Notice to Contractors.**
- 6. If the written Bid is to be sent, Federal Express overnight delivery is suggested as the package is delivered directly to the DOT Headquarters Building in Augusta. Other means, such as U.S. Postal Services’ Express Mail has proven not to be reliable.**

AND FOR FEDERAL AID PROJECTS

- 7. Have you included your DBE Proposed Utilization Form in the proper amounts, and furnished the completed form to the Contracts section by 4:30pm on bid opening day?**

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207)624-3410.

For complete specifications regarding bidding requirements, refer to Section 102 of the Maine Department of Transportation, Standard Specifications, Revision December 2002.

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled, and allow for an electronic downloading of bid packages from our website, while continuing to maintain a planholders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments, must provide an email address to Diane Barnes at the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

The downloading of bid packages from the MDOT website is not the same as providing an electronic bid to the Department. Electronic bids must be submitted via <http://www.BIDX.com>. For information on electronic bidding contract Rebecca Pooler at rebecca.pooler@maine.gov.

NOTICE

For security and other reasons, all Bid Packages which are mailed, shall be provided in double (one envelope inside the other) envelopes. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open

PIN:

Town:

Date of Bid Opening:

Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed

PIN:

Town:

Date of Bid Opening:

Name of Contractor:

This should not be much of a change for those of you who use Federal Express or similar services.

Hand-carried Bids may be in one envelope as before, and should be marked with the following information:

Bid Enclosed: Do Not Open

PIN:

Town:

Name of Contractor:

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT _____

_____, of the City/Town of _____ and State of _____

as Principal, and _____ as Surety, a

Corporation duly organized under the laws of the State of _____ and having a usual place of

Business in _____ and hereby held and firmly bound unto the Treasurer of

the State of Maine in the sum of _____ for payment which Principal and Surety bind

themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

The condition of this obligation is that the Principal has submitted to the Maine Department of

Transportation, hereafter Department, a certain bid, attached hereto and incorporated as a

part herein, to enter into a written contract for the construction of _____

_____ and if the Department shall accept said bid

and the Principal shall execute and deliver a contract in the form attached hereto (properly

completed in accordance with said bid) and shall furnish bonds for this faithful performance of

said contract, and for the payment of all persons performing labor or furnishing material in

connection therewith, and shall in all other respects perform the agreement created by the

acceptance of said bid, then this obligation shall be null and void; otherwise it shall remain in full

force, and effect.

Signed and sealed this _____ day of _____ 20____

WITNESS:

WITNESS

PRINCIPAL:

By _____

By: _____

By: _____

SURETY:

By _____

By: _____

Name of Local Agency: _____

NOTICE

Bidders:

Please use the attached “Request for Information” form when faxing questions and comments concerning specific Contracts that have been Advertised for Bid. Include additional numbered pages as required.

REQUEST FOR INFORMATION

[illegible][illegible]

Response By:_____ Date:_____

INSTRUCTIONS FOR PREPARING THE CONTRACTOR'S DISADVANTAGED BUSINESS ENTERPRISE UTILIZATION PLAN

The Contractor Shall:

1. Submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan to the Contract's Engineer by 4:30 P.M. on the Bid day.
2. Extend equal opportunity to MDOT certified DBE firms (as listed in MDOT's DBE Directory of Certified Businesses) in the selection and utilization of Subcontractors and Suppliers.

SPECIFIC INSTRUCTIONS FOR COMPLETING THE FORM:

Insert Contractor name, the name of the person(s) preparing the form, and that person(s) telephone and fax number.

Provide total Bid price, Federal Project Identification Number, and location of the Project work.

In the columns, name each DBE firm to be used, provide the Unit or Item cost of the Work/Product to be provided by the DBE firm, give a brief description of the Work, and the dollar value of the Work.

If no DBE firm is to be utilized, the Contractor must document the reason(s) why no DBE firms are being used. Specific supporting evidence of good faith efforts taken by Contractors to solicit DBE Bidders must be attached. This evidence, as a minimum, includes phone logs, e-mail and/or mail DBE solicitation records, and the documented results of these solicitations.

NOTICE

Disadvantaged Business Enterprise Proposed Utilization

The Apparent Low Bidder must submit the Disadvantaged Business Enterprise Proposed Utilization form by close of Business (4:30 P.M.) on Bid day.

The Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan form contains additional information that is required by USDOT.

The Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan form must be used.

A copy of the new Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan and instructions for completing it are attached.

Note: Questions about DBE firms, or to obtain a printed copy of the DBE Directory, contact Equal Opportunity at (207) 624-3066.

MDOT's DBE Directory of Certified firms can also be obtained at http://www.state.me.us/mdot/humnres/o_equalo/cdwbed_h.htm

**MaineDOT CONTRACTOR'S DISADVANTAGED BUSINESS ENTERPRISE
PROPOSED UTILIZATION FORM**

Low Bidder must furnish this form to Contracts Section Bid Opening day.

Contractor: _____

Telephone: _____

Prepared by: _____

Fax: _____

BID PRICE: \$ _____

BID DATE: ____/____/____

FEDERAL PIN # _____

PROJECT LOCATION: _____

TOTAL DBE _____ % PARTICIPATION FOR THIS PROJECT

W B E•	D B E•	Firm Name	Unit/Item Cost	Unit #	Description of Work & Item Number	Actual \$ Value
Total >						

Attach supporting evidence to the maximum participation of DBEs on this project. This is a requirement. This evidence must include name of firm(s) contacted, date contacted, and outcome of solicitation.

Equal Opportunity Use:

Form received: ____/____/____ Verified by: _____

____ Accepted ____ Rejected _____

cc: ☐ Contracts ☐ Other _____

- WBEs are non-minority women owned firms certified by MaineDOT
 - DBEs are male and minority owned firms certified by MaineDOT
- For a complete list of certified firms go to <http://www.maine.gov/mdot>

State of Maine
VENDOR FORM
For New Vendors & for Updates on Current Vendors

Special Instructions:

PLEASE PRINT CLEARLY

Return this form to:

*** = MUST BE COMPLETED TO PROCESS**

ONLY ONE NAME/VENDOR PER FORM

New Vendor <input type="text"/>	Address Change <input type="text"/>	Multi Address <input type="text"/>	Name Change <input type="text"/>	Contact Update <input type="text"/>	ID # Change <input type="text"/>
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Social Security Number*
Individual or Sole Proprietor

OR

Federal Taxpayer ID Number*
Corporation

S

Business name in "DBA" field below.

Please fill in ONE.

E

Business name in "Name" field below.

This form will affect all transactions with ALL state agencies.

NEW:*

Remit to Address: Individual or Business Name.

Name*

DBA or C/O

Address*

Tel #*

OLD:

Old number:

Name

DBA or C/O

Address

Tel #

	Is this the same name on your Social Security card?
	If not, have you told Social Security about your name change?

Acct #	<input style="width: 800px;" type="text"/>
Provider #	<input style="width: 800px;" type="text"/>

Signature*

Contact Name

Print Name or Title

Accounts Receivable Contact Name

Date* (within 3 months)

Phone # if Different or for Contact Info

Vendor Indicators: Enter Y (Yes) For All Categories Listed Below That Apply To This Vendor

Dealer:	<input style="width: 60px;" type="text"/>
Jobber:	<input style="width: 60px;" type="text"/>
Individual:	<input style="width: 60px;" type="text"/>
Minority:	<input style="width: 60px;" type="text"/>

Manufacturer:	<input style="width: 60px;" type="text"/>
Retailer:	<input style="width: 60px;" type="text"/>
Partnership:	<input style="width: 60px;" type="text"/>
Small Business:	<input style="width: 60px;" type="text"/>

Factory Rep:	<input style="width: 60px;" type="text"/>
Commodity:	<input style="width: 60px;" type="text"/>
Incorporated:	<input style="width: 60px;" type="text"/>
In-State:	<input style="width: 60px;" type="text"/>

Information on State Agency Submitting Vendor Form

State Agency* & SHS #	Contact Person Name & Title*	Telephone #*
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Send to: Maine Department of Transportation/ Contracts 16 SHS, Augusta, ME 04333-0014 Attn: Pat Brown

May-04

INSTRUCTIONS FOR COMPLETING VENDOR FORM

1. **Print Clearly**
2. **All sections marked with an * must be completed for processing**
3. **Send completed form to requesting State agency OR remit to address at bottom of form.**
4. **Do NOT send by Fax. Only originals will be accepted.**

<u>FIELDS</u>	<u>INFORMATION NEEDED FOR FIELD</u>
<i>Instructi ons</i>	<i>Instructions to Vendor from Agency requesting information.</i>
<i>Return to</i>	<i>The location of agency where the form is to be mailed back to. If none use address at bottom of form.</i>
Boxes above	Please check mark all that apply to the vendor. If other, please specify. If it's a new vendor only one will apply: "New Vendor"
Social Security	Individuals, individuals "doing business as", and individuals without a Federal Taxpayer ID #. Use if not using EIN
Federal Taxpayer	Businesses or professionals providing services. (ID # needs to be use for REMITTANCE purposes.) Use if not using SSN
New	Current Information
Old	Old information (If another ID# had been used please put it next to "OLD")
Name	Individual's Name or Business Name. ONLY ONE name per a form.
DBA or C	"Doing business as" or "In Care Of"
Address	REMITTANCE ADDRESS - Street Address OR PO Box (one or the other)
Tel #	Phone Number of individual or business
Signature	Individual or authorized representative of individual or authorized representative of the business
Date	Current Date (no more than 3 months old)
Contact N	Contact person at business

Accounts Receivable Contact Name	Contact person at business for accounts receivables.
Phone #	Phone for Act Rec Contact
Vendor Indicator s	Indicate all that apply for the vendor, as needed
Agency In	For Agency personnel submitting the form. Contact info incase of questions.



Office of Human Resources

Equal Opportunity

MAINE DEPARTMENT OF TRANSPORTATION

Certified Disadvantaged and Women Business Enterprise

DBE DIRECTORY - MINORITY OWNED

WBE DIRECTORY - WOMEN OWNED

WEBSITE FOR DIRECTORY CAN BE FOUND AT:

http://www.state.me.us/mdot/humnres/o_equalo/cdwbed_h.htm

It is the responsibility of the Contractor to access the DBE Directory at this site in order to have the most current listings.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION NOTICE TO CONTRACTORS

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper "Bids for Highway Improvements and Bike / Pedestrian facility Improvements in the town of Farmingdale" will be received from contractors at the Reception Desk, Maine DOT Building, Child Street, Augusta, Maine, until 11:00 o'clock A.M. (prevailing time) on December 15, 2004, and at that time and place publicly opened and read. Bids will be accepted from contractors prequalified by the Department of Transportation for Highway Construction projects. All other Bids may be rejected. MDOT provides the option of electronic bidding. We now accept electronic bids for those bid packages posted on the bidx.com website. Electronic bids do not have to be accompanied by paper bids. Please note: the Department will accept a facsimile of the bid bond; however, the original bid bond must then be received at the MDOT Contract Section within 72 hours of the bid opening. During this transition, dual bids (one paper, one electronic) will be accepted, with the paper copy taking precedence.

Description: Maine Federal Aid Project No. STP-1853(30)X & STP-1853(310)X, PINS. 1853.30 & 1853.31

Location: In Kennebec County, project STP-1853(30)X is located on Rte.201 from approx. Clark St. extending northerly 0.94 mi to approx. Maple St. Project STP-1853(310)X is a continuation of the Kennebec River Rail Trail through Farmingdale in conjunction with the Rte.201 project.

Outline of Work: Grading, drainage, base, hot mix asphalt, recycled pavement, guardrail, curb, retaining walls, sewer and water utilities, planting trees and shrubs, and other incidental work.

THE BASIS OF AWARD WILL BE SECTION 0001 COMBINED WITH EITHER SECTION 0003 OR SECTION 0004.

For general information regarding Bidding and Contracting procedures, contact Scott Bickford at (207)624-3410. Our webpage at <http://www.state.me.us/mdot/project/design/homepg.htm> contains a copy of the schedule of items, Plan Holders List, written portions of bid amendments (not drawings), and bid results. For Project-specific information fax all questions to **Project Manager** Heath Cowan at (207)624-3431. Questions received after 12:00 noon of Monday prior to bid date will not be answered. Bidders shall not contact any other Departmental staff for clarification of Contract provisions, and the Department will not be responsible for any interpretations so obtained. Hearing impaired persons may call the Telecommunication Device for the Deaf at (207) 624-3007.

Plans, specifications and bid forms may be seen at the Maine DOT Building in Augusta, Maine. They may be purchased from the Department between the hours of 8:00 a.m. to 4:30 p.m. by cash, credit card (Visa/Mastercard) or check payable to Treasurer, State of Maine sent to Maine Department of Transportation, Attn.: Mailroom, 16 State House Station, Augusta, Maine 04333-0016. They also may be purchased by telephone at (207)624-3536 between the hours of 8:00 a.m. to 4:30 p.m. Full size plans \$162.00 (\$171.00 by mail). Half size plans \$81.00 (\$86.00 by mail), Bid Book \$10 (\$13 by mail), Single Sheets \$2, payment in advance, all non-refundable.

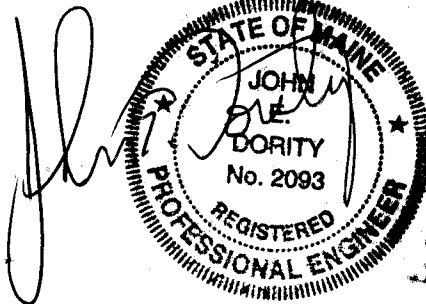
Each Bid must be made upon blank forms provided by the Department and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of \$100,000.00 payable to Treasurer, State of Maine as a Bid guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each in the amount of 100 percent of the Contract price, will be required of the successful Bidder.

This Contract is subject to all applicable Federal Laws. This contract is subject to compliance with the Disadvantaged Business Enterprise program requirements as set forth by the Maine Department of Transportation.

All work shall be governed by "State of Maine, Department of Transportation, Standard Specifications, Revision of December 2002", price \$10 [\$13 by mail], and Standard Details, Revision of December 2002, price \$20 [\$25 by mail] Standard Detail updates can be found at <http://www.state.me.us/mdot/project/design/homepg.htm>

The right is hereby reserved to the MDOT to reject any or all Bids.

Augusta, Maine
November 24, 2004



JOHN E. DORITY
CHIEF ENGINEER

SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each Project under Advertisement, Amendments are located at <http://www.maine.gov/mdot/comprehensive-list-projects/project-information.php>. It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. The Maine DOT will not post Bid Amendments any later than noon the day before Bid opening without individually notifying all the planholders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

MAINE DEPARTMENT OF TRANSPORTATION

BID

DATE OF OPENING :

CALL ORDER :

CONTRACT ID : 001853.30

PROJECTS

STP-1853(30)X

STP-1853(310)X

COUNTY : KENNEBEC

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
SECTION 0001 HIGHWAY ITEMS				
0010	201.23 REMOVING SINGLE TREE TOP ONLY	57.000 EA		
0020	201.24 REMOVING STUMP	75.000 EA		
0030	202.11 REMOVING PORTLAND CEMENT CONCRETE PAVEMENT	6000.000 M2		
0040	202.15 REMOVING MANHOLE OR CATCH BASIN	12.000 EA		
0050	203.20 COMMON EXCAVATION	23000.000 M3		
0060	203.21 ROCK EXCAVATION	850.000 M3		
0070	203.25 GRANULAR BORROW	3500.000 M3		
0080	206.061 STRUCTURAL EARTH EXCAVATION - DRAINAGE AND MINOR STRUCTURES, BELOW GRADE	60.000 M3		
0090	206.07 STRUCTURAL ROCK EXCAVATION - DRAINAGE AND MINOR STRUCTURES	41.000 M3		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0100	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	20760.000 M3		
0110	310.24 PLANT MIX RECYCLED ASPHALT PAVEMENT - 100 MM DEPTH	19300.000 M2		
0120	403.207 HOT MIX ASPHALT 19.0 MM NOMINAL MAX SIZE	3900.000 MG		
0130	403.208 HOT MIX ASPHALT 12.5 MM, SURFACE	2600.000 MG		
0140	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTAL)	970.000 MG		
0150	403.211 HOT MIX ASPHALT (SHIM)	70.000 MG		
0160	409.15 BITUMINOUS TACK COAT APPLIED	4150.000 L		
0170	525.326 FIELD STONE RETAINING WALL	15.000 M2		
0180	534.75 EXTENSION OF EXISTING BOX CULVERT	LUMP	LUMP	
0190	603.159 300 MM CULVERT PIPE OPTION III	36.000 M		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0200	603.179 450 MM CULVERT PIPE OPTION III	224.000 M		
0210	603.195 600 MM RCP CLASS III	5.000 M		
0220	603.1952 600 MM REINFORCED CONCRETE PIPE CLASS V	57.000 M		
0230	603.199 600 MM CULVERT PIPE OPTION III	52.000 M		
0240	603.219 900 MM CULVERT PIPE OPTION III	17.000 M		
0250	604.072 CATCH BASIN TYPE A1-C	41.000 EA		
0260	604.096 1500 MM CATCH BASIN TYPE B1-C	5.600 EA		
0270	604.15 MANHOLE	1.000 EA		
0280	604.153 1500 MM MANHOLE	1.000 EA		
0290	604.154 1800 MM MANHOLE	5.200 EA		
0300	604.16 ALTERING CATCH BASIN TO MANHOLES	2.000 EA		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0310	604.166 REBUILDING MANHOLE	30.000 EA		
0320	604.18 ADJUSTING MANHOLE OR CATCH BASIN TO GRADE	57.000 EA		
0330	604.23 STEP	10.000 EA		
0340	604.2402 BEHIND CURB CATCH BASIN	2.000 EA		
0350	604.244 CATCH BASIN TYPE F4	2.000 EA		
0360	604.247 CATCH BASIN TYPE F5-C	1.000 EA		
0370	604.262 CATCH BASIN TYPE B5-C	1.000 EA		
0380	605.09 150 MM UNDERDRAIN TYPE B	1580.000 M		
0390	605.10 150 MM UNDERDRAIN OUTLET	6.000 M		
0400	605.11 300 MM UNDERDRAIN TYPE C	1280.000 M		
0410	605.13 450 MM UNDERDRAIN TYPE C	154.000 M		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0420	605.15 600 MM UNDERDRAIN TYPE C	102.000 M		
0430	606.17 GUARDRAIL TYPE 3B - SINGLE RAIL	248.000 M		
0440	606.22 GUARDRAIL TYPE 3B - OVER 4.5 M RADIUS	32.000 M		
0450	606.265 TERMINAL END - SINGLE RAIL - GALVANIZED STEEL	14.000 EA		
0460	606.35 GUARDRAIL DELINEATOR POST	30.000 EA		
0470	606.363 GUARDRAIL REMOVE AND DISPOSE	200.000 M		
0480	607.163 CHAIN LINK FENCE - 1.2 METER P.V.C. COATED	705.000 M		
0490	607.22 CEDAR RAIL FENCE	300.000 M		
0500	607.24 REMOVE AND RESET FENCE	20.000 M		
0510	607.35 BRACING ASSEMBLY CHAIN LINK FENCE PVC COATED COATED	10.000 EA		
0520	607.42 ORNAMENTAL PICKET FENCE	75.000 M		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0530	609.111 SPECIAL GRANITE CURB - 600 MM	125.000 M		
0540	609.31 CURB TYPE 3	3395.000 M		
0550	610.08 PLAIN RIPRAP	250.000 M3		
0560	610.16 HEAVY RIPRAP	100.000 M3		
0570	615.07 LOAM	430.000 M3		
0580	618.1301 SEEDING METHOD NUMBER 1 - PLAN QUANTITY	74.000 UN		
0590	618.1411 SEEDING METHOD NUMBER 3 - PLAN QUANTITY	11.000 UN		
0600	619.1201 MULCH - PLAN QUANTITY	85.000 UN		
0610	620.58 EROSION CONTROL GEOTEXTILE	250.000 M2		
0620	621.025 EVERGREEN TREES (900 MM - 1200 MM) GROUP A	18.000 EA		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0630	621.026 EVERGREEN TREES (900 MM - 1200 MM) GROUP B	6.000 EA		
0640	621.027 EVERGREEN TREES (900 MM - 1200 MM) GROUP C	3.000 EA		
0650	621.032 EVERGREEN TREES (1200 MM - 1500 MM) GROUP B	6.000 EA		
0660	621.121 SMALL DECIDUOUS TREES (1500 MM - 1800 MM) GROUP B	30.000 EA		
0670	621.126 SMALL DECIDUOUS TREES (1800 MM - 2400 MM) GROUP A	18.000 EA		
0680	621.267 LARGE DECIDUOUS TREE (45 MM - 50 MM CALIPER) GROUP A	18.000 EA		
0690	621.389 DWARF EVERGREENS (375 MM - 450 MM) GROUP A	42.000 EA		
0700	621.51 DECIDUOUS SHRUBS (375 MM - 450 MM) 	244.000 EA		
0710	621.547 DECIDUOUS SHRUBS (600 MM - 900 MM) GROUP B	24.000 EA		
0720	621.71 HERBACEOUS PERENNIALS GROUP A 	120.000 EA		
0730	621.80 ESTABLISHMENT PERIOD 	LUMP	LUMP	

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0740	622.09 TRANSPLANTING HEDGE	60.000 M		
0750	622.10 TRANSPLANTING SHRUB	7.000 EA		
0760	627.711 WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE (PLAN QUANTITY)	9500.000 M		
0770	627.75 WHITE OR YELLOW PAVEMENT AND CURB MARKING	130.000 M2		
0780	627.78 TEMPORARY 100 MM PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW	10000.000 M		
0790	629.05 HAND LABOR, STRAIGHT TIME	40.000 HR		
0800	631.10 AIR COMPRESSOR (INCLUDING OPERATOR)	20.000 HR		
0810	631.11 AIR TOOL (INCLUDING OPERATOR)	20.000 HR		
0820	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	20.000 HR		
0830	631.13 BULLDOZER (INCLUDING OPERATOR)	40.000 HR		
0840	631.14 GRADER (INCLUDING OPERATOR)	20.000 HR		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0850	631.15 ROLLER, EARTH AND BASE COURSE (INCLUDING OPERATOR)	20.000 HR		
0860	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	40.000 HR		
0870	631.18 CHAIN SAW RENTAL (INCLUDING OPERATOR)	10.000 HR		
0880	631.20 STUMP CHIPPER (INCLUDING OPERATOR)	20.000 HR		
0890	631.32 CULVERT CLEANER (INCLUDING OPERATOR)	20.000 HR		
0900	631.36 FOREPERSON	20.000 HR		
0910	635.14 PREFABRICATED CONCRETE MODULAR GRAVITY WALL	310.000 M2		
0920	635.31 PREFABRICATED CONCRETE BLOCK GRAVITY WALL	100.000 M2		
0930	637.071 DUST CONTROL	LUMP	LUMP	
0940	639.18 FIELD OFFICE TYPE A	1.000 EA		
0950	639.21 TESTING FACILITIES SOILS	LUMP	LUMP	

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
0960	642.15 PRECAST CONCRETE STEPS	1.000 EA		
0970	645.291 ROADSIDE GUIDE SIGNS TYPE II	8.000 M2		
0980	652.31 TYPE I BARRICADE	20.000 EA		
0990	652.311 TYPE II BARRICADE	10.000 EA		
1000	652.33 DRUM	80.000 EA		
1010	652.34 CONE	100.000 EA		
1020	652.35 CONSTRUCTION SIGNS	80.000 M2		
1030	652.361 MAINTENANCE OF TRAFFIC CONTROL DEVICES	LUMP	LUMP	
1040	652.38 FLAGGER	3000.000 HR		
1050	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP	LUMP	
1060	658.20 ACRYLIC LATEX COLOR FINISH, GREEN	20.000 M2		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
1070	659.10 MOBILIZATION	LUMP	LUMP	
1080	660.21 ON-THE-JOB TRAINING (BID)	3000.000 HR		
SECTION 0001 TOTAL				

SECTION 0002 WATER MAIN UTILITIES ITEMS

1090	203.35 CRUSHED STONE FILL	510.000 M3		
1100	206.07 STRUCTURAL ROCK EXCAVATION - DRAINAGE AND MINOR STRUCTURES	39.000 M3		
1110	604.154 1800 MM MANHOLE (PRV STRUCTURE)	1.000 EA		
1130	801.16 150 MM PVC SANITARY SEWER	31.000 M		
1140	803.01 TEST PITS	10.000 EA		
1150	803.16 1.2 M DIAMETER PRECAST SEWER MANHOLE	2.000 EA		
1160	822.321 100 MM CLASS 52 DI PIPE	15.000 M		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
1170	822.33 150 MM CLASS 52 DI PIPE	105.000 M		
1180	822.34 200 MM CLASS 52 DI PIPE	145.000 M		
1190	822.36 300 MM CLASS 52 DI PIPE	1540.000 M		
1200	823.311 300MM GATE VALVE WITH BOX	10.000 EA		
1210	823.3251 200MM GATE VALVE WITH BOX	5.000 EA		
1220	823.3253 TAPPING SLEEVE & GATE VALVE WITH BOX	1.000 EA		
1230	823.331 150 MM GATE VALVE	11.000 EA		
1240	823.3351 100MM GATE VALVE WITH BOX	1.000 EA		
1250	824.30 FIRE HYDRANTS	8.000 EA		
1260	825.311 19 MM CORPORATION	55.000 EA		
1270	825.312 19 MM CURB STOP	55.000 EA		

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
1280	825.33 25 MM CORPORATION	10.000		
		EA		
1290	825.331 25 MM CURB STOP	10.000		
		EA		
1300	825.41 19 MM COPPER SERVICE	665.000		
		M		
1310	825.43 25 MM COPPER SERVICE	121.000		
		M		
1320	827.302 UNSUITABLE MATERIAL EXCAVATION BELOW TRENCH GRADE - GRAVEL BEDDING MATERIAL	255.000		
		M3		
	SECTION 0002 TOTAL			.

SECTION 0003 RETAINING WALL ALTERNATE 1

1120	635.31 PREFABRICATED CONCRETE BLOCK GRAVITY WALL	1270.000		
		M2		
	SECTION 0003 TOTAL			.

SECTION 0004 RETAINING WALL ALTERNATE 2

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 001853.30

PROJECT(S): STP-1853(30)X
STP-1853(310)X

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	CTS	BID AMOUNT DOLLARS	CTS
1330	636.64 SEGMENTAL RETAINING WALL - SUPPLIER DESIGN - 4' OR GREATER	1270.000 M2				
	SECTION 0004 TOTAL					
	TOTAL BID					

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____ a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No's. **1853.30 / 1853.31**

For **Highway Improvements and Bike / Pedestrian Facility** in the town of **Farmingdale**, County of **Kennebec**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **June 30, 2006**. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is

Section 0001 \$ _____

Section 0002 \$ _____

Section 0003 \$ _____

Section 0004 \$ _____

Performance Bond and Payment Bond each being 100% of the amount awarded under this Contract (see award amount in Section G below).

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to Division 100 of the Standard Specifications Revision of December 2002 (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PINS. 1853.30 / 1853.31 - Highway Improvements and Bike / Pedestrian Facility in the town of Farmingdale,

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items".

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items", which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work on the date specified in the Engineer's "Notice to Commence Work" as stated in Section 107.2 of the Standard Specifications Revision of December 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and

submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan by 4:30pm on the day of bid opening to the Contracts Engineer.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award.

Your offer is hereby accepted for (see checked boxes):

Section 0001 ☐

Section 0002 ☐

Section 0003 ☐

Section 0004 ☐

Contract Amount: _____

This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: David A. Cole, Commissioner

Witness

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____ a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No's. **1853.30 / 1853.31**

For **Highway Improvements and Bike / Pedestrian Facility** in the town of **Farmingdale**, County of **Kennebec**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **June 30, 2006**. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is

Section 0001 \$ _____

Section 0002 \$ _____

Section 0003 \$ _____

Section 0004 \$ _____

Performance Bond and Payment Bond each being 100% of the amount awarded under this Contract (see award amount in Section G below).

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to Division 100 of the Standard Specifications Revision of December 2002 (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PINS. 1853.30 / 1853.31 - Highway Improvements and Bike / Pedestrian Facility in the town of Farmingdale,

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items".

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items", which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work on the date specified in the Engineer's "Notice to Commence Work" as stated in Section 107.2 of the Standard Specifications Revision of December 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and

submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan by 4:30pm on the day of bid opening to the Contracts Engineer.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award.

Your offer is hereby accepted for (see checked boxes):

Section 0001 ☐

Section 0002 ☐

Section 0003 ☐

Section 0004 ☐

Contract Amount: _____

This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: David A. Cole, Commissioner

Witness

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

(Name of the firm bidding the job)

a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at **(address of the firm bidding the job)**

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No. **1224.00**

for the **Hot Mix Asphalt Overlay** in the town/city of **West Eastport**, County of **Washington**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **November 15**, 2003. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is (Place bid here in alphabetical form such as One Hundred and Two dollars and 10 cents) \$ (repeat bid here in numerical terms, such as \$102.10) Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to Division 100 of the Standard Specifications Revision of December 2002 (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PIN 1234.00 West Eastport, Hot Mix Asphalt Overlay

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items".

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items", which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work on the date specified in the Engineer's "Notice to Commence Work" as stated in Section 107.2 of the Standard Specifications Revision of 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan by 4:30pm on the day of bid opening to the Contracts Engineer.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR
(Sign Here)

(Signature of Legally Authorized Representative
of the Contractor)
(Witness Sign Here) _____ (Print Name Here)
Witness _____
(Name and Title Printed)

G. Award.

Your offer is hereby accepted.
documents referenced herein.

This award consummates the Contract, and the

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: David A. Cole, Commissioner

(Witness)

BOND # _____

CONTRACT PERFORMANCE BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ **and the State of** _____, as principal,
and _____,
a corporation duly organized under the laws of the State of _____ and having a
usual place of business _____,
as Surety, are held and firmly bound unto the Treasurer of the State of Maine in the sum
of _____ **and 00/100 Dollars (\$** _____ **)**,
to be paid said Treasurer of the State of Maine or his successors in office, for which
payment well and truly to be made, Principal and Surety bind themselves, their heirs,
executors and administrators, successors and assigns, jointly and severally by these
presents.

The condition of this obligation is such that if the Principal designated as Contractor in
the Contract to construct Project Number _____ in the Municipality of
_____ promptly and faithfully performs the Contract, then this
obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the State
of Maine.

Signed and sealed this _____ day of _____, 20....

WITNESSES:

Signature.....
Print Name Legibly

Signature

Print Name Legibly

SURETY ADDRESS:

.....
.....
.....

TELEPHONE.....

SIGNATURES:

CONTRACTOR:

.....
Print Name Legibly

SURETY:

.....
Print Name Legibly

NAME OF LOCAL AGENCY:

ADDRESS

.....
.....

.....

BOND # _____

CONTRACT PAYMENT BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ **and the State of** _____, as principal,
and _____
a corporation duly organized under the laws of the State of _____ and having a
usual place of business in _____,
as Surety, are held and firmly bound unto the Treasurer of the State of Maine for the use
and benefit of claimants as herein below defined, in the sum of
_____ **and 00/100 Dollars (\$** _____ **)**
for the payment whereof Principal and Surety bind themselves, their heirs, executors and
administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in
the Contract to construct Project Number _____ in the Municipality of
_____ promptly satisfies all claims and demands incurred for all
labor and material, used or required by him in connection with the work contemplated by
said Contract, and fully reimburses the obligee for all outlay and expense which the
obligee may incur in making good any default of said Principal, then this obligation shall
be null and void; otherwise it shall remain in full force and effect.

A claimant is defined as one having a direct contract with the Principal or with a
Subcontractor of the Principal for labor, material or both, used or reasonably required for
use in the performance of the contract.

Signed and sealed this _____ day of _____, 20 .. .

WITNESS:

SIGNATURES:

CONTRACTOR:

Signature.....

Print Name Legibly

SURETY:

Signature.....

Print Name Legibly

SURETY ADDRESS:

NAME OF LOCAL AGENCY:

ADDRESS

.....

TELEPHONE

General Decision Number: ME030009 07/30/2004 ME9

Superseded General Decision Number: ME020009

State: Maine

Construction Types: Highway

Counties: Aroostook, Franklin, Hancock, Kennebec, Knox, Lincoln, Oxford, Piscataquis, Sagadahoc, Somerset, Waldo and York Counties in Maine.

HIGHWAY CONSTRUCTION PROJECTS excluding major bridging (for example: bascule, suspension and spandrel arch bridges; those bridging waters presently navigating or to be navigatable; and those involving marine construction in any degree); tunnels, building structures in rest area projects and railroad construction.

Modification Number	Publication Date
0	06/13/2003
1	07/30/2004

* ENGI0004-015 04/01/2004

	Rates	Fringes
Power equipment operators:		
Pavers.....	\$ 16.51	6.70
Rollers.....	\$ 16.51	6.70

SUME2000-008 10/24/2000

	Rates	Fringes
Carpenter.....	\$ 11.60	1.51
Ironworkers:		
Structural.....	\$ 12.03	1.58
Laborers:		
Drillers.....	\$ 10.00	2.50
Flaggers.....	\$ 6.00	
Guardrail Installers.....	\$ 7.92	
Landscape.....	\$ 7.87	.16
Line Stripper.....	\$ 8.69	.23
Pipelayers.....	\$ 9.21	2.31
Rakers.....	\$ 9.00	1.51
Sign Erectors.....	\$ 10.00	
Unskilled.....	\$ 8.66	1.38
Wheelman.....	\$ 8.50	.43
Power equipment operators:		
Backhoes.....	\$ 11.87	2.05
Bulldozers.....	\$ 12.33	2.88
Cranes.....	\$ 14.06	1.75
Excavators.....	\$ 12.38	2.48
Graders.....	\$ 13.06	3.73
Loaders.....	\$ 11.41	2.87
Mechanics.....	\$ 13.18	2.57
Truck drivers:		
Dump.....	\$ 9.35	3.10
Tri axle.....	\$ 8.70	1.18

Two axle.....\$ 8.56 2.19

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION

SPECIAL PROVISION
CONSTRUCTION AREA

A Construction Area located in the **Town of Farmingdale** has been established by the Maine Department of Transportation in accordance with provisions of Title 29, Section 1703, Maine Revised Statutes Annotated.

- (a) The section of highway under construction beginning at Sta. 11+300 and ending at Sta. 13+060 of the construction centerline plus approaches.
- (b) (Rte.201) The section of highway under construction beginning at Sta. 11+300 and ending at Sta. 13+060 of the new construction centerline plus approaches.

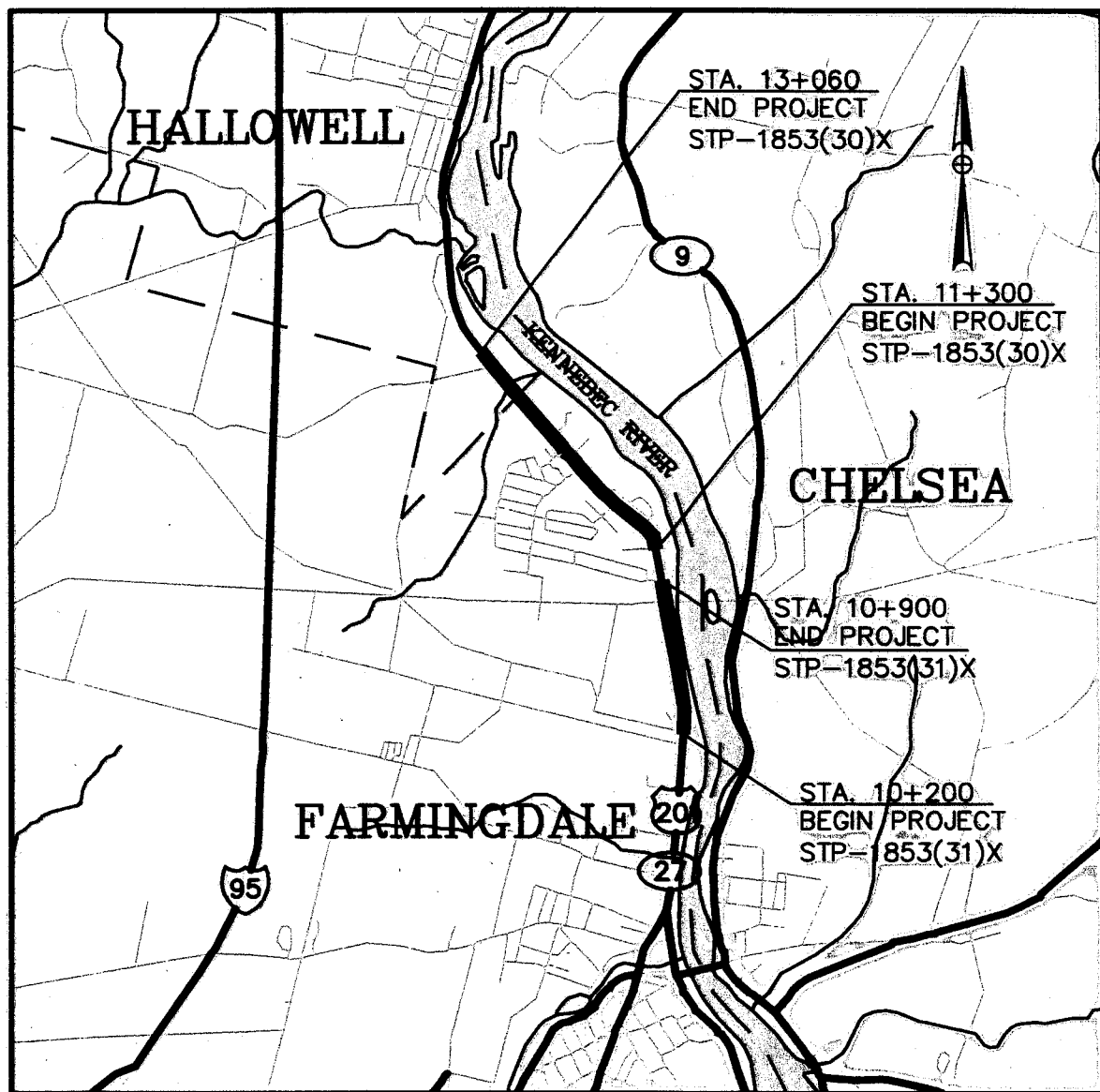
The State Department of Transportation or the State's Engineer may issue permits for stated periods of time for moving construction equipment without loads, low-bed trailers with overloads, over-height, over-width or over-length equipment or materials over all State maintained sections described in the "Construction Area" above and in addition may issue permits for stated periods of time for moving overweight vehicles and loads over the section described in (a) above. The right to revoke such a permit at any time is reserved by the State Department of Transportation and the issuance of such permits shall be subject to any Special Provisions or Supplemental Specifications written for this project.

A Temporary Permit for each move may be issued by the State Department of Transportation or the State's Engineer for moving Contractor's construction equipment used on the project which exceeds the legal limits (shovels, bulldozers, etc.) to sources of construction material over highways maintained by the State reasonably within the area of the project.

The Municipal Officers for the **Town of Farmingdale** agreed that a permit will be issued to the Contractor for the purpose of hauling loads in excess of the limits as specified in Title 29, Maine Revised Statutes Annotated, on the town ways as described in the "Construction Area" and that single move permits will be issued for moving Contractor's construction equipment used on the project which exceeds the legal limits (shovels, bulldozers, etc.) to sources of construction material over town ways reasonably within the area of the project.

In the event it is necessary to transport gravel, borrow, or other construction material in legally registered vehicles carrying legal loads over town ways, a Contractor's Bond of not more than Nine Thousand (\$9,000.00) per kilometer of traveled length may be required by the town, the exact amount of said bond to be determined prior to use of any town way.

The maximum speed limits for trucks on any town way will be forty (40) km per hour [25 mph], unless a higher legal limit is specifically agreed upon in writing by the Municipal Officers concerned.



A PORTION OF KENNEBEC COUNTY
LOCATION MAP



TO GARDINER

10+000

SPECIAL PROVISION
CONSTRUCTION AREA

Title 29A, M.R.S.A., Subsection 2383. Overlimit movement permits

1. Overlimit movement permits issued by State. The Secretary of State, acting under guidelines and advice of the Commissioner of Transportation, may grant permits to move non-divisible objects having a length, width, height or weight greater than specified in this Title over a way or bridge maintained by the Department of Transportation.
2. Permit Fee. The Secretary of State, with the advice of the Commissioner of Transportation, may set the fee for these permits, at not less than \$3, nor more than \$15, based on weight, height, length and width.
3. County and municipal permits. A permit may be granted, for a reasonable fee, by county commissioners or municipal officers for travel over a way or bridge maintained by that county or municipality.
4. Permits for weight. A vehicle granted a permit for excess weight must first be registered for the maximum gross vehicle weight allowed for that vehicle.
5. Special mobile equipment. The Secretary of State may grant a permit, for no more than one year, to move pneumatic-tire equipment under its own power, including Class A and Class B special mobile equipment, over ways and bridges maintained by the Department of Transportation. The fee for that permit is \$15 for each 30-day period.
6. Scope of permit. A permit is limited to the particular vehicle or object to be moved and particular ways and bridges.
7. Construction permits. A permit for a stated period of time may be issued for loads and equipment employed on public way construction projects, United States Government projects or construction of private ways, when within construction areas established by the Department of Transportation. The Permit:
 - A. Must be procured from the municipal officers for a construction area within that municipality;
 - B. May require the Contractor to be responsible for damage to ways used in the construction areas and may provide for:
 - (1) Withholding by the agency of the work of final payment under contract; or
 - (2) The furnishing of a bond by the Contractor to guarantee suitable repair or payment of damages.
 - C. May be granted by the Department of Transportation or by the state engineer in charge of the construction contract; and
 - D. For construction areas, carries no fee and does not come within the scope of this section.
8. Gross vehicle weight permits. The following may grant permits to operate a vehicle having a gross vehicle weight exceeding the prescribed limit:

- A. The Secretary of State, with the consent of the Department of Transportation, for state and state aid highways and bridges within city or compact village limits;
 - B. Municipal officers, for all other ways and bridges within that city and compact village limits; and
 - C. The county commissioners, for county roads and bridges located in unorganized territory.
9. Pilot vehicles and state police escorts. Pilot vehicles required by a permit must be equipped with warning lights and signs as required by the Secretary of State with the advice of the Department of Transportation.

Warning lights may only be operated and lettering on the signs may only be visible on a pilot vehicle while it is escorting on a public way a vehicle with a permit.

The Secretary of State shall require a State Police escort for a single vehicle or a combination of vehicles of 125 feet or more in length or 16 feet or more in width. The Secretary of State, with the advice of the Commissioner of Transportation, may require vehicles of lesser dimensions to be escorted by the State Police.

The Bureau of State Police shall establish a fee for State Police escorts.

All fees collected must be used to defray the cost of services provided.

With the advice of the Commissioner of Transportation and the Chief of the State Police, the Secretary of State shall establish rules for the operation for the operation of pilot vehicles.

10. Taxes paid. A permit for a mobile home may not be granted unless the applicant provides reasonable assurance that all property taxes, sewage disposal charges and drain and sewer assessments applicable to the mobile home, including those for the current tax year, have been paid or that the mobile home is exempt from those taxes.

1993, c. 683, § S-2, eff. January 1, 1995.

Historical and Statutory Notes

Derivation:

R.S. 1954, c. 22 § 98
Laws 1955, c. 389
Laws 1967, c. 3.
Laws 1971, c. 593, § 22.
Laws 1973, c. 213.
Laws 1975, c. 130, §
Laws 1975, c. 319, § 2

Laws 1977, c. 73, § 5.
Laws 1981, c. 413.
Laws 1985, c. 225, § 1
Laws 1987, c. 52.
Laws 1987, 781, § 3.
Laws 1989, c. 866, § B-13.
Laws 1991, c. 388, § 8.
Laws 1993, c. 683, § A-1.
Former 29 M.R.S.A. § 2382.

Cross Reference

Collection by Secretary of State, See 29-A
M.R.S.A. § 154.

SPECIAL PROVISION
SECTION 102.3
EXAMINATION OF DOCUMENTS, SITE AND OTHER INFORMATION
(Geotechnical Information)

Geotechnical Information pertaining to this project has been collected and assembled. Bidders and Contractors are obligated to examine and, if necessary, obtain geotechnical information. Geotechnical Information is available at the Maine Department of Transportation office on Child Street, Augusta, Maine. Geotechnical Information will be provided to interested parties who request this information. Requests for this information should be directed to the Project Manager as outlined in the "Notice to Contractors".

The Department shall not be responsible for Bidder's and Contractor's interpretations of, or estimates or conclusions drawn from, the Geotechnical Information. Data provided may not be representative of the subsurface conditions between the boring locations.

This section does not diminish the duties imposed upon parties in Section 102 or in any other sections.

City: **Farmingdale/Hallowell**
Project: **STP 1853(30) X, PIN 1853.30**
STP 1853(31) X, PIN 1853.31
Date: **November 8, 2004**

SPECIAL PROVISIONS
SECTION 104
Utilities

MEETING

A Preconstruction Utility Conference, as defined in Subsection 104.4.6 of the Standard Specifications is hereby called for.

GENERAL INFORMATION

These Special Provisions outline the arrangements that have been made by the Department for coordination of the work and for utility adjustments, as defined in Subsection 104.4.6 and 104.4.8 of the Standard Specifications. The following list identifies all known utilities or railroads having facilities presently located within or near the limits of this project or intending to install facilities during project construction, unless otherwise provided.

Overview:

Utility/Railroad	Aerial	Underground	Railroad
Central Maine Power Company	X	X	
Adelphia Communications	X	X	
Verizon Communications	X	X	
AT&T Corporation		X	
Gardiner Water District		X	
Hallowell Water District		X	
Town of Farmingdale		X	
MaineDOT			X

Temporary utility adjustments are not contemplated unless herein provided for.

The approximate locations of major items of existing and proposed (permanent and temporary) utility plant are shown on the highway construction plans.

All utility crossings over highways will provide not less than 20 feet vertical clearance over existing ground in cut or over finished grade in fill, during construction of this project.

Manholes, valve boxes, service connections, and similar incidental utility plant are to be adjusted in cooperation with work being done by the Contractor.

Unless otherwise provided, utilities will not be required to make underground installations in frozen ground.

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All adjustments are to be made by the respective utility/railroad unless otherwise specified herein.

Any times and dates mentioned are estimates only and are dependent upon favorable weather, working conditions, and freedom from emergencies. The Contractors shall have no claim against the Department if they are exceeded. Utility working days are Monday through Friday, conditions permitting. Times are estimated on the basis of a single crew for each utility.

In all cases, the utilities shall be advised well in advance (generally three weeks) before work, dependent upon other work to be done by the Contractor, in any particular area, is to be commenced by them.

Unless otherwise specified, any underground utility facilities shown on the project plans represent approximate locations gathered from available information. The Department cannot certify the level of accuracy of this data. Underground facilities indicated on the topographic sheets (plan views) have been collected from historical records and/or on-site designations provided by the respective utility companies. Underground facilities indicated on the cross-sections have been carried over from the plan view data and may also include further approximations of the elevations (depths) based upon straight-line interpolation from the nearest manholes, gate valves, or test pits.

All clearing and tree removal which is a part of this contract in areas where utilities are involved must be completed by the Contractor before the utilities can relocate their facilities. Any tree removal or tree trimming required within ten feet of the electrical conductors must be done by a qualified contractor. A list of tree removal contractors qualified to remove trees or limbs within ten feet of the electrical conductors may be obtained from the power company.

AERIAL

*****A DETAILED POLE LIST IS ATTACHED TO THIS SPECIAL PROVISION*****

Summary:

Utility	Pole Set	New Wires/ Cables	Trans. Wires/ Cables	Remove Poles	Estimated Working Days
Central Maine Power Company	39	X		X	37
Verizon	9	X	X	X	80
Adelphia		X			10
Total:					127

City: **Farmingdale/Hallowell**
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Central Maine Power Company, Verizon Communications' and Adelphia Communications' aerial utilities will require relocation or replacement.

Central Maine Power plans to place 39 poles in the Farmingdale portion of the project, from STA 11+360 to STA 12+780+/- . Estimated working time is 10 working days. See combined pole list for specific pole location information. New conductors will be installed, anticipating 20 working days to do this work. Once all other parties are off the old poles, CMP will remove the old poles and their conductors, anticipating 5 working days to do this work. In addition to the new pole sets, CMP has 5 poles to make alternate guying arrangements on (in the area of the Kennebec River Rail Trail construction, STA 10+200 to STA 10+900), anticipating 2 working days to do this work.

Verizon plans to place 9 poles in the Hallowell portion of the project, from STA 12+830 to STA 13+094. Estimated working time is 5 working days. See combined pole list for specific pole location information. New cables will be installed and some existing cables will be transferred, anticipating 60 working days to do this work. Once all other parties are off the old poles, Verizon will remove the old poles and their cables or conductors, anticipating 15 working days to do this work.

Adelphia plans to install new cables as a part of the whole aerial transfer operation. Estimated working time for Adelphia is 10 working days.

SUBSURFACE

Summary:

Utility	Summary of Work	Estimated Working Days
Gardiner Water District	Water main replacement	
Hallowell Water District	Adjust frames, grates, valve boxes, etc.	10
Town of Farmingdale	Adjust manhole frames	
Total:		

Utility Specific Issues:

UNDERGROUND

The Town of Farmingdale: Has entered into an agreement with the Department to have the Contractor adjust the Sewer Manholes to grade. The Contractor shall notify both MDOT and the Town of Farmingdale as adjustments occur. *****A detailed list of manhole adjustments and required work is attached to this Special Provision.***** The Contractor shall note that the manhole location and rim adjustment information is approximate, and

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for estimating & planning purposes only. The Contractor shall verify all information prior to construction.

The Hallowell Water District has underground water and sewer facilities in the Maple Street area of the project. These facilities are shown on the plans and sections and are based on approximate locations. The Hallowell Water District has also entered into an agreement with the Department to have the Contractor adjust the Sewer Manholes to grade. The Contractor shall notify both MDOT and the Hallowell Water District as adjustments occur. *****A detailed list of manhole adjustments and required work is attached to this Special Provision.***** The Contractor shall note that the manhole location and rim adjustment information is approximate, and for estimating & planning purposes only. The Contractor shall verify all information prior to construction. The District will adjust all other gates, valves, hydrants, and appurtenances in conjunction with the Contractor (unless otherwise noted on the plans). Additionally, in the vicinity of the Town line (STA 12+810+/-) the Hallowell Water District will coordinate with the Gardiner Water District for that water main work.

As part of this project the Contractor will be installing a new water main along Maine Avenue (Route 201). Contractor shall coordinate this work with the Gardiner Water District, the Town of Farmingdale, and their representatives. In cases of conflict within the two sets of specifications, the MDOT specifications will generally take precedence over the Gardiner Water District specifications, unless the District specifications provide the more stringent standard, in which case it shall be followed. Such determination will be made the MDOT Resident Engineer.

CONTRACTOR

Provisions for the installation of the new water main along Maine Avenue (Route 201), as noted above, are included as part of the construction of this project. See Appendix A, Water Main Replacement Plans and the respective Specifications for more detailed information. The Contractor shall coordinate his work on these items with the Gardiner Water District, to the extent that may be required by the "District" to meet obligations to their customers and in order to meet the standards and/or requirements for the construction of the water main. In coordination with the MDOT Resident Engineer, the Gardiner Water District reserves the right to review, inspect, and approve/disapprove any of their work on the project.

Upon review of the bid results of their work, the Gardiner Water District reserves the right (per their Letter of Agreement with the MDOT), to remove their work from the overall project and bid their work separately. Should this occur, the Contractor shall make all efforts necessary to coordinate his/her work with the selected utility contractor.

The Contractor will aid the aerial utilities with spot cuts and fills at proposed pole locations, as determined at the preconstruction utility meeting. Payment and work will be incidental to Item 203.20, common excavation. The Contractor will further assist the

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utilities with the layout of curb lines and retaining wall locations prior to placement of poles.

For drainage and water main installations; aerial utilities will perform any necessary “pole holds” at their cost for the first occasion. Any subsequent requests per pole will be at the Contractor’s cost, to be agreed to between the Contractor and the utility.

RAILROAD

The Maine Department of Transportation owns and operates the rail line adjacent to the proposed Kennebec River Rail Trail and supporting retaining walls. The Contractor shall exercise caution in operating next to the rail line, so as not to foul or damage the tracks, ballast, or associated features. The restoring and resurfacing of tracks, if disturbed due to Contractor’s operations, shall be at the expense of the Contractor. Unless design dictates, the Contractor shall not operate within 5’ of the nearest rail and shall try and maintain safety buffer offsets at all times.

If needed, the Department will allow temporary crossings of the track for construction. The Contractor shall supply and install proper planks for the crossing. Equipment of the Contractor shall be in such condition so as to prevent failure that would cause delay in the operation of trains or damage to railroad facilities. Equipment shall not be placed or put in operation adjacent to a track without first obtaining permission of the Department.

SAFE PRACTICES AROUND UTILITY FACILITIES

The contractor shall be responsible for complying with M.R.S.A. Title 35-A, Chapter 7-A-Sections 751-761 Overhead High-Voltage Line Safety Act. Prior to commencing any work that may come within ten (10) feet of any aerial electrical, the Contractor shall notify the aerial utilities as per Section 757 of the above act.

DIG SAFE

The Contractor shall be responsible for determining the presence of underground utility facilities prior to commencing any excavating work and shall notify utilities of proposed excavation in accordance with M.R.S.A. Title 23 3360-A, Maine “Dig Safe” System.

BLASTING

In addition to any other notice which may be required, the Contractor shall notify an authorized representative of each utility having plant close to the site not later than 3:00 P.M. on the working day (Monday through Friday) before he intends to blast. Notice shall state the approximate time of the blast.

THE CONTRACTOR SHALL PLAN AND CONDUCT HIS WORK ACCORDINGLY

CMP Pole #	Verz. Pole #	Existing Station	Rt/Lt	Existing Offset from C.L. (m)	Existing Offset from C.L. (ft)	New Station	Rt/Lt	New Offset from C.L. (m)	New Offset from C.L. (ft)	Set Back from Existing Pole (ft)	Miscellaneous/Remarks
102	89	11+360.4	R	7.2	23.6			7.5	24.6	N/A	
103	90	11+395.7	R	6.5	21.3			8.0	26.2	4.9	
104	91	11+442.2	L	9.1	29.8			9.6	31.5	1.6	
106	93	11+510	L	9.6	31.5			9.6	31.5	0.0	
106.1	93.1	11+520.3	R	9.7	31.8			8.5	27.9	N/A	MOVED STATION TO CLOSE TO DRIVE WAY
107	94	11+554	L	8.7	28.5			9.6	31.5	3.0	
108	95	11+591.7	L	8.1	26.6			9.6	31.5	4.9	
109	96	11+613	L	7.4	24.3			9.6	31.5	7.2	
110	97	11+673.5	L	7.5	24.6			9.2	30.2	5.6	PLACE POLE IN FRONT OF WALL
111	98	11+717.5	L	7.4	24.3			9.2	30.2	5.9	PLACE POLE IN FRONT OF WALL
1	9	10+013	R	4.3	14.1			10.0	32.8	18.7	SECOND ST
112	99	11+774.7	L	6.7	22.0			9.2	30.2	8.2	PLACE POLE IN FRONT OF WALL
113	100	11+812.3	L	6.7	22.0			9.6	31.5	9.5	
114	101	11+860	L	6.2	20.3			9.6	31.5	11.2	
119	102	11+890.5	L	6.3	20.7			9.6	31.5	10.8	
120	107	11+938.5	L	6.2	20.3			9.6	31.5	11.2	
121	106	11+970.6	L	6	19.7			9.2	30.2	10.5	PLACE POLE IN FRONT OF WALL
121 1/2	105	11+999.6	L	6.2	20.3			9.2	30.2	9.8	PLACE POLE IN FRONT OF WALL
122S	104S	12+025.7	R	8.6	28.2				0.0	N/A	
122	104	12+037.5	L	6.6	21.6			9.6	31.5	9.8	
123	103	12+069.7	L	6	19.7			9.6	31.5	11.8	
124		12+111	L	5.4	17.7			9.6	31.5	13.8	
125		12+143.8	L	5.6	18.4	12+143		9.6	31.5	13.1	
126		12+199.6	L	5.5	18.0	12+192.5		9.8	32.1	14.1	
127		12+237.6	L	5.5	18.0			9.6	31.5	13.4	
128	98	12+296.7	L	5.8	19.0			9.6	31.5	12.5	
129	97	12+341	L	5.5	18.0			9.5	31.2	13.1	
130	96	12+388.3	L	5.1	16.7			7.8	25.6	8.9	
131	95	12+435.5	L	5.7	18.7			7.8	25.6	6.9	
132	94	12+483.4	L	6.3	20.7			7.8	25.6	4.9	
133	93	12+539.2	L	5.3	17.4			7.8	25.6	8.2	
133S	93S	12+539.8	R	8.4	27.6	12+538.5	R	7.7	25.3	-2.3	
134	92	12+575.8	L	6.5	21.3			8.7	28.5	7.2	
135	89	12+619.3	L	6.8	22.3			7.8	25.6	3.3	
136	88	12+644	L	6.8	22.3			7.8	25.6	3.3	
137	87	12+698.5	L	5.9	19.4			7.8	25.6	6.2	
138	86	12+738.9	L	6.3	20.7			7.8	25.6	4.9	
139	85	12+778.5	L	7.1	23.3			9.2	30.2	6.9	
140	82				0.0	12+830.5	R	9.0	29.5	29.5	SPOT FILL, NEW R/W FOR POLE, VZ NEEDS EASE
144	81				0.0	12+877	R	8.6	28.2	28.2	45' PL 0' PULL NEED R/W FOR X-ARM OVERHANG
144.1	81-1				0.0	12+908.2	L	8.2	26.9	26.9	R/W FOR POLE
146	80				0.0	12+940.4	R	10.0	32.8	32.8	NEED R/W FOR POLE, VZ NEEDS EASEMENT FOR
147	79				0.0	12+980.8	R	9.5	31.2	31.2	45' PL 0' PULL
148	78				0.0	13+014.8	R	9.1	29.8	29.8	5' PL 0' PULL NEED R/W FOR X-ARM OVERHANG
149	76				0.0	13+046.8	R	7.5	24.6	24.6	45' PL 0' PULL NEED R/W FOR X-ARM OVERHANG
149S	76S				0.0	13+046.8	L	6.5	21.3	21.3	
150	75				0.0	13+094	R	8.3	27.2	27.2	? PULL EXISTING POLE TO REMAIN

MDOT Project PIN 1853.30 Route 201 Farmingdale
Sanitary Sewer Manhole Adjustment Summary

Remove From Existing Structure				Replace With New Parts on Existing Structure											
Manhole Number	Station	Raise/ Lower	Adjustment	Frame &		Brick/ Block	Cone	Precast Concrete	Transition Barrel	2' Barrel Section	2' Cone	3' Cone	4' Cone	Grade Ring	Frame & Cover
				Cover	Block										
1	11+297	5.9"	26"	6"	14"		4'		X				X	8" +/-	6"
2	11+332	1.9"	8"	6"											8"
3	11+425	9.7"	24"	6"	14"		4'		X	X					6"
4	11+426	6.2"	23"	6"	11"		4		X				X	4" +/-	6"
5	11+530	2.3"	23"	6"	15"		3'		X			X		4" +/-	6"
6	11+554	9"	23"	6"	8"		3'		X			X		4" +/-	6"
7	11+555	13.7"	24"	9 1/2"			3'		X			X		4" +/-	6"
8	11+601	5.9"	22"	6"	10"		4'		X				X	2" +/-	6"
9	11+675	6.5"	24"	6"	12"		4'		X				X	4" +/-	6"
10	11+707	4.2"	22"	6"	10"		4'		X				X	4" +/-	6"
11	11+764	3.9"	21"	6"	11"									12" +/-	8"
12	11+801	-0.7"	10"	6"	5"									4" +/-	6"
13	11+802	-2.1"	20"	6"	16"									12" +/-	6"
14	11+866	-12.7"	7"	6"	14"										6"
15	11+893	2"	12"	6"	4"									4" +/-	6"
16	11+934	4.1"	10"	6"										4" +/-	5"
17	11+954	4.5"	11"	6"										4" +/-	6"
18	11+993	-2.3"	Buried	6"	6.5"									6" +/-	6"
19	12+041	-7.5"	2"	6"	4"			1" to 2"							3"
20	12+067	-7.3"	3"	6"	4"			1" to 2"							3"
21	12+151	8.6"	19"	10"				1" to 2"						12" +/-	6"
22	12+151	-3"	Buried	6"	12"									8" +/-	6"
23	12+151	8.6"	15"	6"										8" +/-	6"
24	12+205	0.9"	21"	6"	14"									12" +/-	8"
25	12+206	5.7"	17"	6"	5"									10" +/-	6"
26	12+261	3"	13"	6"	4"									6" +/-	6"
27	12+297	9.7"	26"	6"	10"		4'		X				X	6" +/-	6"
28	12+326	18.1"	34"	6"	9 1/2"		3'		X				X	2" +/-	6"
29	12+328	13.7"	33"	6"	13"		3'		X				X	2" +/-	6"
30	12+387	4.9"	19"	6"	8"									12" +/-	6"
31	12+507	4.8"	19"	6"	9"									12" +/-	6"
32	12+538	4.8"	22"	8"	9"		2'		X		X			2" +/-	6"

Note: Existing manholes are believed to have been manufactured by BURTCO which is no longer in business. Gagne Precast makes a transition piece to match their sections to BURTCO which is suggested for this application.

MDOT Project PIN 1853.30 Route 201 Farmingdale/Hallowell

Route 201 - Hallowell Sanitary Sewer Manhole Adjustment Summary

(Location and elevation values are approximate for estimating only - not for construction)

Station (m)	Offset (m)	Offset (ft)	Existing Elev (m)	Proposed Centerline Elev (m)	Approx. Proposed Elev (m)	Diff (m)	Diff (in)	Raise or Lower
12+943	-5.9	-19.5	32.955	33.1599	33.041	0.086	3.4	Raise
12+960	7.9	25.8	33.358	33.3661	33.209	-0.149	-5.9	Lower
12+989	-6.0	-19.6	33.308	33.14	33.021	-0.287	-11.3	Lower
13+069	-5.6	-18.2	29.851	29.882	29.771	-0.080	-3.2	Lower

Farmingdale
1853.30
November 18, 2004

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Cooperation)

The property owner at the Neilson's Sporting Goods location intends to relocate his building on the same parcel to match the new roadway grade. Work in the vicinity of this parcel shall be coordinated with the building owner, through the Resident.

Waste material suitable for fill to bring this parcel to roadway grade may be made available to the owner with approval from the Resident.

Town: **Farmingdale**
PIN #: **1853.30 / 31**
Date: **October 25, 2004**

SPECIAL PROVISION
SECTION 105
General Scope of Work
(Environmental Requirements)

In-water Work shall not be allowed between the dates of **10/2** and **7/14**.
(In-water work is allowed from **7/15** to **10/1**.)

Water body Name(s) with Station #s: **unnamed streams @: sta. 10+885, sta. 12+650, sta. 12+765 & sta. 12+835.**

Special Conditions: In-Water work shall be conducted during low flows.

In-Water work consists of any activity conducted below the normal high water mark.

All activities are prohibited (including placement and removal of cofferdams) below the normal high water mark and non low flow conditions during the In-Water work window restriction, except for the following:

- Work within a sealed and dewatered cofferdam. Maintenance pumping within a sealed cofferdam is also allowed.

No construction activity, whether temporary or permanent, is allowed that completely blocks a river, stream, or brook without providing downstream flow.

The contractor shall abide by all permits and conditions.

Farmingdale
Route 201
PIN 001853.30

SPECIAL PROVISION

Section 105

(General Scope of Work)

MaineDOT found evidence of petroleum-related soil contamination between Stations 12+780 through 12+820, right of centerline at depths of 2 to 3 meters below ground surface. Plans call for this area to be filled during the construction initiative. Given this, the identified zone of contamination will be deeper than any proposed excavation in the area. However, in light of the available environmental data, the Contractor shall remain alert for evidence of contamination. If the Contractor encounters evidence of soil or groundwater contamination, the Contractor shall secure the excavation, stop work in the contaminated area, and immediately notify the Engineer. The Engineer shall contact the Hydrogeologist in MaineDOT's Environmental Office at 207-624-3100 and the Maine Department of Environmental Protection at 800-482-0777. Work may only continue with authorization from the Engineer.

Farmingdale
1853.30
November 18, 2004

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(TRAFFIC CONTROL)

The Contractor will maintain two-way traffic after 3:30 pm daily on this project.

SPECIAL PROVISION
SECTION 105
LEGAL RELATIONS WITH AND RESPONSIBILITY TO PUBLIC
(NPDES)

105.8.2 Permit Requirements This Section is revised by the addition of the following paragraph:

”The Contractor is advised that the Environmental Protection Agency has issued a final National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges from construction sites disturbing more than 2 ha [5 acres]. This permit requires:

- Storm Water Pollution Prevention Plan
- Submission of a Notification of Intent (NOI) at least 48 hours before construction commences
- Submission of a Notification of Termination (NOT) when a site has been finally stabilized and all storm water discharges from construction activities are eliminated.

If the project’s land disturbances is 2 ha [5 acres] or more, the Department will prepare the plan and submit the NOI (and NOT). The Contractor shall prepare plans and submit NOI’s (and NOT’s) for regulated construction activities beyond the project limits (e.g., borrow pits).

The Contractor shall be familiar with and comply with these regulations.”

SPECIAL PROVISION
SECTION 107
TIME
(Limitation of Operations)
and
(Supplemental Liquidated Damages)

Where existing pavement carries traffic and is removed to install (or remove) drainage or utility structures, the pavement shall be replaced weekly with a temporary pavement consisting of a minimum of 75 mm [3 inches] of acceptable hot mix asphalt. No separate payment will be made for furnishing, placing, maintaining, and removing temporary pavement and all cost of such work will be considered incidental to the contract.

Where existing travelway pavement is excavated or covered by fill as a part of the general grading operations prior to November 15, 2004, a binder course of hot mix asphalt shall be installed and completed on or before November 15, 2004.

Supplemental liquidated damages shall be assessed the Contractor in the amount of Two Hundred Dollars (\$200.00) per day for each calendar day, beginning November 16, 2004 that above stated binder course remains incomplete. This assessment of supplemental liquidated damages shall be in addition to the liquidated damages per working day, as specified in Section 107 of the Standard Specifications.

Grading operations which excavate or fill over existing pavement being used to carry traffic shall be suspended on November 15, 2004 and not be resumed until the Spring of 2005.

Farmingdale
1853.30 / 1853.31
November 16, 2004

SPECIAL PROVISION
SECTION 107
TIME

The specified contract completion date is June 30, 2006.

SPECIAL PROVISION
(Consolidated Special Provisions)

SPECIAL PROVISION SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions - Closeout Documentation

Replace the sentence “A letter stating the amount..... DBE goals.” with “DBE Goal Attainment Verification Form”

SPECIAL PROVISION SECTION 102
DELIVERY OF BIDS
(Location and Time)

102.7.1 Location and Time Add the following sentence “As a minimum, the Bidder will submit a Bid Package consisting of the Notice to Contractors, the completed Acknowledgement of Bid Amendments & Submission of Bid Bond Validation Number form, the completed Schedule of Items, 2 copies of the completed Agreement, Offer, & Award form, a Bid Bond or Bid Guarantee, and any other Certifications or Bid Requirements listed in the Bid Book.”

SPECIAL PROVISION SECTION 103
AWARD AND CONTRACTING

103.3.1 Notice and Information Gathering Change the first paragraph to read as follows: “After Bid Opening and as a condition for Award of a Contract, the Department may require an Apparent Successful Bidder to demonstrate to the Department’s satisfaction that the Bidder is responsible and qualified to perform the Work.”

SPECIAL PROVISION SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES

Delete the entire Section 104.5.9 and replace with the following:

104.5.9 Landscape Subcontractors The Contractor shall retain only Landscape Subcontractors that are certified by the Department’s Environmental Office Landscape Unit.

SPECIAL PROVISION SECTION 105 GENERAL SCOPE OF WORK

Delete the entire Section 105.6 and replace with the following:

105.6.1 Department Provided Services The Department will provide the Contractor with the description and coordinates of vertical and horizontal control points, set by the Department, within the Project Limits, for full construction Projects and other Projects where survey control is necessary. For Projects of 1,500 feet in length, or less: The Department will provide three points. For Projects between 1,500 and 5,000 feet in length: The Department will provide one set of two points at each end of the Project. For Projects in excess of 5,000 feet in length, the Department will provide one set of two points at each end of the Project, plus one additional set of two points for each mile of Project length. For non-full construction Projects and other Projects where survey control is not necessary, the Department will not set any control points and, therefore, will not provide description and coordinates of any control points. Upon request of the Contractor, the Department will provide the Department's survey data management software and Survey Manual to the Contractor, or its survey Subcontractor, for the exclusive use on the Department's Projects.

105.6.2 Contractor Provided Services Utilizing the survey information and points provided by the Department, described in Subsection 105.6.1, Department Provided Services, the Contractor shall provide all additional survey layout necessary to complete the Work. This may include, but not be limited to, reestablishing all points provided by the Department, establishing additional control points, running axis lines, providing layout and maintenance of all other lines, grades, or points, and survey quality control to ensure conformance with the Contract. The Contractor is also responsible for providing construction centerline, or close reference points, for all Utility Facilities relocations and adjustments as necessary to complete the Work. When the Work is to connect with existing Structures, the Contractor shall verify all dimensions before proceeding with the Work. The Contractor shall employ or retain competent engineering and/or surveying personnel to fulfill these responsibilities.

The Contractor must notify the Department of any errors or inconsistencies regarding the data and layout provided by the Department as provided by Section 104.3.3 - Duty to Notify Department If Ambiguities Discovered.

105.6.2.1 Survey Quality Control The Contractor is responsible for all construction survey quality control. Construction survey quality control is generally defined as, first, performing initial field survey layout of the Work and, second, performing an independent check of the initial layout using independent survey data to assure the accuracy of the initial layout; additional iterations of checks may be required if significant discrepancies are discovered in this process. Construction survey layout quality control also requires written documentation of the layout

process such that the process can be followed and repeated, if necessary, by an independent survey crew.

105.6.3 Survey Quality Assurance It is the Department's prerogative to perform construction survey quality assurance. Construction survey quality assurance may, or may not, be performed by the Department. Construction survey quality assurance is generally defined as an independent check of the construction survey quality control. The construction survey quality assurance process may involve physically checking the Contractor's construction survey layout using independent survey data, or may simply involve reviewing the construction survey quality control written documentation. If the Department elects to physically check the Contractor's survey layout, the Contractor's designated surveyor may be required to be present. The Department will provide a minimum notice of 48 hours to the Contractor, whenever possible, if the Contractor's designated surveyor's presence is required. Any errors discovered through the quality assurance process shall be corrected by the Contractor, at no additional cost to the Department.

105.6.4 Boundary Markers The Contractor shall preserve and protect from damage all monuments or other points that mark the boundaries of the Right-of-Way or abutting parcels that are outside the area that must be disturbed to perform the Work. The Contractor indemnifies and holds harmless the Department from all claims to reestablish the former location of all such monuments or points including claims arising from 14 MRSA § 7554-A. For a related provision, see Section 104.3.11 - Responsibility for Property of Others.

SPECIAL PROVISION SECTION 106 QUALITY

106.6 Acceptance Add the following to paragraph 1 of A: "This includes Sections 401 - Hot Mix Asphalt, 402 - Pavement Smoothness, and 502 - Structural Concrete - Method A - Air Content."

Add the following to the beginning of paragraph 3 of A: "For pay factors based on Quality Level Analysis, and"

SPECIAL PROVISION SECTION 107 TIME

107.3.1 General Add the following: "If a Holiday occurs on a Sunday, the following Monday shall be considered a Holiday. Sunday or Holiday work must be approved by the Department, except that the Contractor may work on Martin Luther King Day, President's Day, Patriot's Day, the Friday after Thanksgiving, and Columbus Day without the Department's approval."

107.7.2 Schedule of Liquidated Damages Replace the table of Liquidated Damages with the following:

From More Than	Up to and Including	Amount of Liquidated Damages per Calendar Day
\$0	\$100,000	\$100
\$100,000	\$300,000	\$200
\$300,000	\$500,000	\$400
\$500,000	\$1,000,000	\$575
\$1,000,000	\$2,000,000	\$750
\$2,000,000	\$4,000,000	\$900
\$4,000,000	and more	\$1,875

SPECIAL PROVISION SECTION 108 PAYMENT

108.4 Payment for Materials Obtained and Stored First paragraph, second sentence, delete the words "...Delivered on or near the Work site at acceptable storage places."

SPECIAL PROVISION SECTION 109 CHANGES

109.1.1 Changes Permitted Add the following to the end of the paragraph: "There will be no adjustment to Contract Time due to an increase or decrease in quantities, compared to those estimated, except as addressed through Contract Modification(s)."

109.1.2 Substantial Changes to Major Items Add the following to the end of the paragraph: "Contract Time adjustments may be made for substantial changes to Major Items when the change affects the Critical Path, as determined by the Department"

109.4.4 Investigation / Adjustment In the third sentence, delete the words "subsections (A) - (E)"

109.5.1 Definitions - Types of Delays

B. Compensable Delay Replace (1) with the following; "a weather related Uncontrollable Event of such an unusually severe nature that a Federal Emergency Disaster is declared. The Contractor will only be entitled to an Equitable Adjustment if the Project falls within the geographic boundaries prescribed under the disaster declaration."

109.7.2 Basis of Payment Replace with the following: "Equitable Adjustments will be established by mutual Agreement for compensable items listed in Section 109.7.3-

Compensable Items, based upon Unit or Lump Sum Prices. If Agreement cannot be reached, the Contractor shall accept payment on a Force Account basis as provided in Section 109.7.5 - Force Account Work, as full and complete compensation for all Work relating to the Equitable Adjustment.”

109.7.3 Compensable Items Replace with the following: “The Contractor is entitled to compensation for the following items, with respect to agreed upon Unit or Lump Sum Prices:

1. Labor expenses for non-salaried Workers and salaried foremen.
2. Costs for Materials.
3. A markup on the totals of Items 1 and 2 of this subsection 109.7.3 for home office overhead and profit of the Contractor, its Subcontractors and suppliers, and any lower tier Subcontractors or suppliers, with no mark-ups on mark-ups.
4. Cost for Equipment, based on Blue Book Rates or leased rates, as set forth in Section 109.7.5(C), or the Contractor’s Actual Costs.
5. Costs for extended job-site overhead.
6. Time.
7. Subcontractor quoted Work, as set forth below in Section 109.7.5 (F).”

109.7.5 Force Account Work

C. Equipment

Paragraph 2, delete sentence 1 which starts; “Equipment leased...”

Paragraph 6, change sentence 2 from “The Contractor may furnish...” to read “If requested by the Department, the Contractor will produce cost data to assist the Department in the establishment of such rental rate, including all records that are relevant to the Actual Costs including rental Receipts, acquisition costs, financing documents, lease Agreements, and maintenance and operational cost records.”

Add the following paragraph; “Equipment leased by the Contractor for Force Account Work and actually used on the Project will be paid for at the actual invoice amount plus 10% markup for administrative costs.”

Add the following section;

“F. Subcontractor Quoted Work When accomplishing Force Account Work that utilizes Subcontractor quoted Work, the Contractor will be allowed a maximum markup of 5% for profit and overhead.”

SPECIAL PROVISION SECTION 110 INDEMNIFICATION, BONDING, AND INSURANCE

Delete the entire Section 110.2.3 and replace with the following:

110.2.3 Bonding for Landscape Establishment Period The Contractor shall provide a signed, valid, and enforceable Performance, Warranty, or Maintenance Bond complying with the Contract, to the Department at Final Acceptance.

The bond shall be in the full amount for all Pay Items for work pursuant to Sec 621, Landscape, payable to the “Treasurer - State of Maine,” and on the Department’s forms, on exact copies thereof, or on forms that do not contain any significant variations from the Department’s forms as solely determined by the Department.

The Contractor shall pay all premiums and take all other actions necessary to keep said bond in effect for the duration of the Landscape Establishment Period described in Special Provision 621.0036 - Establishment Period. If the Surety becomes financially insolvent, ceases to be licensed or approved to do business in the State of Maine, or stops operating in the United States, the Contractor shall file new bonds complying with this Section within 10 Days of the date the Contractor is notified or becomes aware of such change.

All Bonds shall be procured from a company organized and operating in the United States, licensed or approved to do business in the State of Maine by the State of Maine Department of Business Regulation, Bureau of Insurance, and listed on the latest Federal Department of the Treasury listing for “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies.”

By issuing a bond, the Surety agrees to be bound by all terms of the Contract, including those related to payment, time for performance, quality, warranties, and the Department’s self-help remedy provided in Section 112.1 - Default to the same extent as if all terms of the Contract are contained in the bond(s).

Regarding claims related to any obligations covered by the bond, the Surety shall provide, within 60 Days of Receipt of written notice thereof, full payment of the entire claim or written notice of all bases upon which it is denying or contesting payment. Failure of the Surety to provide such notice within the 60-day period constitutes the Surety’s waiver of any right to

deny or contest payment and the Surety's acknowledgment that the claim is valid and undisputed.

SPECIAL PROVISION SECTION 401 HOT MIX ASPHALT PAVEMENT

401.18 Quality Control Method A & B Make the following change to paragraph a. QCP Administrator; in the final sentence, change "...certified as a Plant Technician or Paving Inspector..." to "...certified as a Quality Assurance Technologist..."

401.201 Method A Under a. Lot Size, add the following; 'Each lot will be divided into a minimum of four sublots for mix properties and five sublots for percent TMD.'

SPECIAL PROVISION SECTION 402 PAVEMENT SMOOTHNESS

Add the following: "Projects to have their pavement smoothness analyzed in accordance with this Specification will be so noted in Special Provision 403 - Bituminous Box."

"402.02 Lot Size Lot size for smoothness will be 1000 lane-meters [3000 lane-feet]. A subplot will consist of 20 lane-meters [50 lane-feet]. Partial lots will be included in the previous lot if less than one-half the size of a normal lot. If greater than one-half the normal lot size, it will be tested as a separate lot."

SPECIAL PROVISION SECTION 502 STRUCTURAL CONCRETE

502.05 Composition and Proportioning; TABLE #1; NOTE #2; third sentence; Change "...alcohol based saline sealer..." to "alcohol based silane sealer..."

502.0502 Quality Assurance Method A - Rejection by Resident Change the first sentence to read: "For an individual subplot with test results failing to meet the criteria in Table #1, or if the calculated pay factor for Air Content is less than 0.80....."

502.0503 Quality Assurance Method B - Rejection by Resident Change the first sentence to read: "For material represented by a verification test with test results failing to meet the criteria in Table #1, the Department will....."

502.0505 Resolution of Disputed Acceptance Test Results Combine the second and third sentence to read: "Circumstances may arise, however, where the Department may"

502.10 Forms and False work

D. Removal of Forms and False work 1., First paragraph; first, second, and third sentence; replace “forms” with “forms and false work”

502.11 Placing Concrete

G. Concrete Wearing Surface and Structural Slabs on Precast Superstructures Last paragraph; third sentence; replace “The temperature of the concrete shall not exceed 24° C [75° F] at the time of placement.” with “The temperature of the concrete shall not exceed 24° C [75° F] at the time the concrete is placed in its final position.”

502.15 Curing Concrete First paragraph; replace the first sentence with the following; “All concrete surfaces shall be kept wet with clean, fresh water for a curing period of at least 7 days after concrete placing, with the exception of vertical surfaces as provided for in Section 501.10 (D) - Removal of Forms and False work.”

Second paragraph; delete the first two sentences.

Third paragraph; delete the entire paragraph which starts “When the ambient temperature...”

Fourth paragraph; delete “approved” to now read “...continuously wet for the entire curing period...”

Fifth paragraph; second sentence; change “...as soon as it is possible to do so without damaging the concrete surface.” to “...as soon as possible.”

Seventh paragraph; first sentence; change “...until the end of the curing period.” to “...until the end of the curing period, except as provided for in Section 502.10(D) - Removal of Forms and False work.”

SPECIAL PROVISION SECTION 503
REINFORCING STEEL

503.06 Placing and Fastening Change the second paragraph, first sentence from: “All tack welding shall be done in accordance with Section 504, Structural Steel.” to “All tack welding shall be done in accordance with AWS D1.4 Structural Welding Code - Reinforcing Steel.”

SPECIAL PROVISION SECTION 504
STRUCTURAL STEEL

504.18 Plates for Fabricated Members Change the second paragraph, first sentence from: "...ASTM A 898/A 898 M..." to "...ASTM A 898/A 898 M or ASTM A 435/A 435 M as applicable and..."

SPECIAL PROVISION SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.02 Materials Change "Steel Strand for Concrete Reinforcement" to "Steel Strand." Add the following to the beginning of the third paragraph; "Concrete shall be Class P conforming to the requirements in this section. 28 day compressive strength shall be as stated on the plans. Coarse aggregate...."

535.26 Lateral Post-Tensioning Replace the first paragraph; "A final tension..." with "Overstressing strands for setting losses cannot be accomplished for chuck to chuck lengths of 7.6 m [25 ft] and less. In such instances, refer to the Plans for all materials and methods. Otherwise, post-tensioning shall be in accordance with PCI standards and shall provide the anchorage force noted in the Plans. The applied jacking force shall be no less than 100% of the design jacking force."

SPECIAL PROVISION SECTION 603
PIPE CULVERTS AND STORM DRAINS

603.0311 Corrugated Polyethylene Pipe for Option III Replace the Minimum Mandrel Diameter Table with the following:

Nominal Size US Customary (in)	Minimum Mandrel Diameter (in)	Nominal Size Metric (mm)	Minimum Mandrel Diameter (mm)
12	11.23	300	280.73
15	14.04	375	350.91
18	16.84	450	421.09
24	22.46	600	561.45
30	28.07	750	701.81
36	33.69	900	842.18
42	39.30	1050	982.54
48	44.92	1200	1122.90

SPECIAL PROVISION SECTION 604
MANHOLES, INLETS, AND CATCH BASINS

604.02 Materials Add the following:

“Tops and Traps	712.07
Corrugated Metal Units	712.08
Catch Basin and Manhole Steps	712.09”

SPECIAL PROVISION SECTION 605
UNDERDRAINS

605.05 Underdrain Outlets Make the following change:

In the first paragraph, second sentence, delete the words “metal pipe”.

SPECIAL PROVISION SECTION 606
GUARDRAIL

606.02 Materials Delete the entire paragraph which reads “The sole patented supplier of multiple mailbox...” and replace with “Acceptable multiple mailbox assemblies shall be listed on the Department’s Approved Products List and shall be NCHRP 350 tested and approved.”

Delete the entire paragraph which reads “Retroreflective beam guardrail delineators...” and replace with “Reflectorized sheeting for Guardrail Delineators shall meet the requirements of Section 719.01 - Reflective Sheeting. Delineators shall be fabricated from high-impact, ultraviolet and weather resistant thermoplastic.

606.09 Basis of Payment First paragraph; delete the second and third sentence in their entirety and replace with “Butterfly-type guardrail reflectorized delineators shall be mounted on all W-beam guardrail at an interval of every 10 posts [62.5 ft] on tangents sections and every 5 posts [31.25 ft] on curved sections as directed by the Resident. On divided highways, the delineators shall be yellow on the left hand side and silver/white on the right hand side. On two-way roadways, the delineators shall be silver/white on the right hand side. All delineators shall have retroreflective sheeting applied to only the traffic facing side. Reflectorized guardrail delineators will not be paid for directly, but will be considered incidental to the guardrail items.”

SPECIAL PROVISION SECTION 615
LOAM

615.02 Materials Make the following change:

Organic Content

Percent by Volume

Humus

“5% - 10%”, as determined by Ignition Test

SPECIAL PROVISION SECTION 618
SEEDING

618.01 Description Change the first sentence to read as follows: “This work shall consist of furnishing and applying seed” Also remove “,and cellulose fiber mulch” from 618.01(a).

618.03 Rates of Application In 618.03(a), remove the last sentence and replace with the following: “These rates shall apply to Seeding Method 2, 3, and Crown Vetch.”

In 618.03(c) “1.8 kg [4 lb]/unit.” to “1.95 kg [4 lb]/unit.”

618.09 Construction Method In 618.09(a) 1, sentence two, replace “100 mm [4 in]” with “25 mm [1 in] (Method 1 areas) and 50 mm [2 in] (Method 2 areas)”

618.15 Temporary Seeding Change the Pay Unit from Unit to Kg [lb].

SPECIAL PROVISION SECTION 620
GEOTEXTILES

620.03 Placement Section (c)

Title: Replace “Non-woven” in title with “Erosion Control”.

First Paragraph: Replace first word “Non-woven” with “Woven monofilament”.

Second Paragraph: Replace second word “Non-woven” with “Erosion Control”.

620.07 Shipment, Storage, Protection and Repair of Fabric Section (a)

Replace the third sentence with the following: “Damaged geotextiles, as identified by the Resident, shall be repaired immediately.”

620.09 Basis of Payment

Pay Item 620.58: Replace “Non-woven” with “Erosion Control”

Pay Item 620.59: Replace “Non-woven” with “Erosion Control”

SPECIAL PROVISION SECTION 621
LANDSCAPING

621.0036 Establishment Period In paragraph 4 and 5, change “time of Final Acceptance” to “end of the period of establishment”. In Paragraph 7, change “Final Acceptance date” to “end

of the period of establishment” and change “date of Final Acceptance” to “end of the period of establishment”.

SPECIAL PROVISION SECTION 626 HIGHWAY SIGNING

626.034 Concrete Foundations Add to the following to the end of the second paragraph: “Pre-cast and cast-in-place foundations shall be warranted against leaning and corrosion for two years after the project is completed. If the lean is greater than 2 degrees from normal or the foundation is spalling within the first two years, the Contractor shall replace the foundation at no extra cost.”

SPECIAL PROVISION SECTION 637 DUST CONTROL

637.06 Basis of Payment Add the following after the second sentence of the third paragraph: “Failure by the Contractor to follow Standard Specification or Special Provision - Section 637 and/or the Contractor’s own Soil Erosion and Pollution Control Plan concerning Dust Control and/or the Contractor’s own Traffic Control Plan concerning Dust Control and/or visible evidence of excessive dust problems, as determined by the Resident, will result in a reduction in payment, computed by reducing the Lump Sum Total by 5% per occurrence per day. The Department’s Resident or any other representative of the Department reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Department shall not be held responsible for any delay in the work due to any suspension under this item. Additional penalties may also be assessed in accordance with Special Provision 652 - Work Zone Traffic Control and Standard Specification 656 - Temporary Soil Erosion and Water Pollution Control.”

SPECIAL PROVISION SECTION 639 ENGINEERING FACILITIES

639.04 Field Offices Change the forth to last paragraph from: “The Contractor shall provide a fully functional desktop copier...” to “....desktop copier/scanner...”

SPECIAL PROVISION SECTION 652 MAINTENANCE OF TRAFFIC

652.3.5 Installation of Traffic Control Devices In the first paragraph, first sentence; change “Signs shall be erected...” to “Portable signs shall be erected...” In the third sentence; change

“Signs must be erected so that the sign face...” to “Post-mounted signs must also be erected so that the sign face...”

652.8.2 Other Items Replace the last paragraph with the following: “There will be no payment made under any 652 pay items after the expiration of the adjusted total contract time.”

SPECIAL PROVISION SECTION 653 POLYSTYRENE PLASTIC INSULATION

653.05 Placing Backfill In the second sentence; change “...shall be not less than 150 mm [6 in] loose measure.” to “...shall be not less than 250 mm [10 in] loose measure.” In the third sentence; change “...crawler type bulldozer of not more than 390 kg/m² [80 lb/ft²] ground contact pressure...” to “...crawler type bulldozer of not more than 4875 kg/m² [2000 lb/ft²] ground contact pressure...”

653.06 Compaction In the last sentence; change “...crawler type bulldozer of not more than 390 kg/m² [80 lb/ft²] ground contact pressure...” to “...crawler type bulldozer of not more than 4875 kg/m² [2000 lb/ft²] ground contact pressure...”it].”

SPECIAL PROVISION SECTION 656 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL

656.5.1 If Pay Item 656.75 Provided Replace the second paragraph with the following: “Failure by the Contractor to follow Standard Specification or Special Provision - Section 656 and/or the Contractor’s own Soil Erosion and Pollution Control Plan will result in a reduction in payment, computed by reducing the Lump Sum Total by 5% per occurrence per day. The Department’s Resident or any other representative of the Department reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Department shall not be held responsible for any delay in the work due to any suspension under this item.”

SPECIAL PROVISION SECTION 703 AGGREGATES

703.06 Aggregate for Base and Subbase Delete the first paragraph: “The material shall have...” and replace with “The material shall have a minimum degradation value of 15 as determined by Washington State DOT Test Method T113, Method of Test for Determination of Degradation Value (March 2002 version), except that the reported degradation value will be the result of testing a single specimen from that portion of a sample that passes the 12.5 mm [½ in] sieve and is retained on the 2.00 mm [No. 10] sieve, minus any reclaimed asphalt pavement used.”

703.07 Aggregates for HMA Pavements Delete the forth paragraph: "The composite blend shall have..." and replace with "The composite blend, minus any reclaimed asphalt pavement used, shall have a Micro-Deval value of 18.0 or less as determined by AASHTO TP 58. In the event the material exceeds the Micro Deval limit, a Washington Degradation test shall be performed. The material shall be acceptable if it has a value of 30 or more as determined by Washington State DOT Test Method T 113, Method of Test for Determination of Degradation Value (March 2002 version) except that the reported degradation value will be the result of testing a single composite specimen from that portion of the sample that passes the 12.5mm [1/2 inch] sieve and is retained on the 2.00mm [No 10] sieve, minus any reclaimed asphalt pavement used."

703.22 Underdrain Backfill Material Change the first paragraph from "...for Underdrain Type B..." to "...for Underdrain Type B and C..."

SPECIAL PROVISION SECTION 706 NON-METALLIC PIPE

706.06 Corrugated Polyethylene Pipe for Underdrain, Option I and Option III Culvert Pipe Change the first sentence from "...300 mm diameters to 900 mm" to "...300 mm diameters to 1200 mm" Delete, in it's entirety, the last sentence which begins "This pipe and resins..." and replace with the following; "The manufacturing plants of polyethylene pipe shall be certified by the Eastern States Consortium. Polyethylene pipe shall be accepted based on third party certification by the AASHTO's National Transportation Product Evaluation Program."

SPECIAL PROVISION SECTION 709 REINFORCING STEEL AND WELDED STEEL WIRE FABIC

709.03 Steel Strand Change the second paragraph from "...shall be 12mm [1/2 inch] AASHTO M203M/M203 (ASTM A416/A416M)..." to "...shall be 15.24 mm [0.600 inch] diameter AASHTO M203 (ASTM A416)..."

SPECIAL PROVISION SECTION 712 MISCELLANEOUS HIGHWAY MATERIALS

Add the following:

"712.07 Tops, and Traps These metal units shall conform to the plan dimensions and to the following specification requirements for the designated materials.

Gray iron castings shall conform to the requirements of AASHTO M105, Class 30, unless otherwise designated.

Carbon steel castings shall conform to the requirements of AASHTO M103/M103M. Grade shall be 450-240 [65-35] unless otherwise designated.

Structural steel shall conform to the requirements of AASHTO M183/M183M or ASTM A283/A283M, Grade B or better. Galvanizing, where specified for these units, shall conform to the requirements of AASHTO M111.

712.08 Corrugated Metal Units The units shall conform to plan dimensions and the metal to AASHTO M36/M36M. Bituminous coating, when specified, shall conform to AASHTO M190 Type A.

712.09 Catch Basin and Manhole Steps Steps for catch basins and for manholes shall conform to ASTM C478M [ASTM C478], Section 13 for either of the following material:

- (a) Aluminum steps-ASTM B221M, [ASTM B211] Alloy 6061-T6 or 6005-T5.
- (b) Reinforced plastic steps Steel reinforcing bar with injection molded plastic coating copolymer polypropylene. Polypropylene shall conform to ASTM D 4101.

712.23 Flashing Lights Flashing Lights shall be power operated or battery operated as specified.

- (a) Power operated flashing lights shall consist of housing, adapters, lamps, sockets, reflectors, lens, hoods and other necessary equipment designed to give clearly visible signal indications within an angle of at least 45 degrees and from 3 to 90 m [10 to 300 ft] under all light and atmospheric conditions.

Two circuit flasher controllers with a two-circuit filter capable of providing alternate flashing operations at the rate of not less than 50 nor more than 60 flashes per minute shall be provided.

The lamps shall be 650 lumens, 120 volt traffic signal lamps with sockets constructed to properly focus and hold the lamp firmly in position.

The housing shall have a rotatable sun visor not less than 175 mm [7 in] in length designed to shield the lens.

Reflectors shall be of such design that light from a properly focused lamp will reflect the light rays parallel. Reflectors shall have a maximum diameter at the point of contact with the lens of approximately 200 mm [8 in].

The lens shall consist of a round one-piece convex amber material which, when mounted, shall have a visible diameter of approximately 200 mm [8 in]. They shall distribute light

and not diffuse it. The distribution of the light shall be asymmetrical in a downward direction. The light distribution of the lens shall not be uniform, but shall consist of a small high intensity portion with narrow distribution for long distance throw and a larger low intensity portion with wide distribution for short distance throw. Lenses shall be marked to indicate the top and bottom of the lens.

(b) Battery operated flashing lights shall be self-illuminated by an electric lamp behind the lens. These lights shall also be externally illuminated by reflex-reflective elements built into the lens to enable it to be seen by reflex-reflection of the light from the headlights of oncoming traffic. The batteries must be entirely enclosed in a case. A locking device must secure the case. The light shall have a flash rate of not less than 50 nor more than 60 flashes per minute from minus 30 °C [minus 20 °F] to plus 65 °C [plus 150 °F]. The light shall have an on time of not less than 10 percent of the flash cycle. The light beam projected upon a surface perpendicular to the axis of the light beam shall produce a lighted rectangular projection whose minimum horizontal dimension shall be 5 degrees each side of the horizontal axis. The effective intensity shall not have an initial value greater than 15.0 candelas or drop below 4.0 candelas during the first 336 hours of continuous flashing. The illuminated lens shall appear to be uniformly bright over its entire illuminated surface when viewed from any point within an angle of 9 degrees each side of the vertical axis and 5 degrees each side of the horizontal axis. The lens shall not be less than 175 mm [7 in] in diameter including a reflex-reflector ring of 13 mm [½ in] minimum width around the periphery. The lens shall be yellow in color and have a minimum relative luminous transmittance of 0.440 with a luminance of 2854° Kelvin. The lens shall be one-piece construction. The lens material shall be plastic and meet the luminous transmission requirements of this specification. The case containing the batteries and circuitry shall be constructed of a material capable of withstanding abuse equal to or greater than 1.21 mm thick steel [No. 18 U.S. Standard Gage Steel]. The housing and the lens frame, if of metal shall be properly cleaned, degreased and pretreated to promote adhesion. It shall be given one or more coats of enamel which, when dry shall completely obscure the metal. The enamel coating shall be of such quality that when the coated case is struck a light blow with a sharp tool, the paint will not chip or crack and if scratched with a knife will not powder. The case shall be so constructed and closed as to exclude moisture that would affect the proper operation of light. The case shall have a weep hole to allow the escape of moisture from condensation. Photoelectric controls, if provided, shall keep the light operating whenever the ambient light falls below 215 lx [20 foot candles]. Each light shall be plainly marked as to the manufacturer's name and model number.

If required by the Resident, certification as to conformance to these specifications shall be furnished based on results of tests made by an independent testing laboratory. All lights are subject to random inspection and testing. All necessary random samples shall be

provided to the Resident upon request without cost to the Department. All such samples shall be returned to the Contractor upon completion of the tests.

712.32 Copper Tubing Copper tubing and fittings shall conform to the requirements of ASTM B88M Type A [ASTM B88, Type K] or better.

712.33 Non-metallic Pipe, Flexible Non-metallic pipe and pipe fittings shall be acceptable flexible pipe manufactured from virgin polyethylene polymer suitable for transmitting liquids intended for human or animal consumption.

712.34 Non-metallic Pipe, Rigid Non-metallic pipe shall be Schedule 40 polyvinylchloride (PVC) that meets the requirement of ASTM D1785. Fittings shall be of the same material.

712.341 Metallic Pipe Metallic pipe shall be ANSI, Standard B36.10, Schedule 40 steel pipe conforming to the requirements of ASTM A53 Types E or S, Grade B. End plates shall be steel conforming to ASTM A36/A36M.

Both the sleeve and end plates shall be hot dip galvanized. Pipe sleeve splices shall be welded splices with full penetration weld before galvanizing.

712.35 Epoxy Resin Epoxy resin for grouting or sealing shall consist of a mineral filled thixotropic, flexible epoxy resin having a pot life of approximately one hour at 10°C [50°F]. The grout shall be an approved product suitable for cementing steel dowels into the preformed holes of curb inlets and adjacent curbing. The sealant shall be an approved product, light gray in color and suitable for coating the surface.

712.36 Bituminous Curb The asphalt cement for bituminous curb shall be of the grade required for the wearing course, or shall be Viscosity Grade AC-20 meeting the current requirements of Subsection 702.01 Asphalt Cement. The aggregate shall conform to the requirements of Subsection 703.07. The coarse aggregate portion retained on the 2.36 mm [No. 8] sieve may be either crushed rock or crushed gravel.

The mineral constituents of the bituminous mixture shall be sized and graded and combined in a composite blend that will produce a stable durable curbing with an acceptable texture. Bituminous material for curb shall meet the requirements of Section 403 - Hot Bituminous Pavement.

712.37 Precast Concrete Slab Portland cement concrete for precast slabs shall meet the requirements of Section 502 - Structural Concrete, Class A.

The slabs shall be precast to the dimension shown on the plans and cross section and in accordance with the Standard Detail plans for Concrete Sidewalk Slab. The surface shall be

finished with a float finish in accordance with Subsection 502.14(c). Lift devices of sufficient strength to hold the slab while suspended from cables shall be cast into the top or back of the slab.

712.38 Stone Slab Stone slabs shall be of granite from an acceptable source, hard, durable, predominantly gray in color, free from seams which impair the structural integrity and be of smooth splitting character. Natural color variations characteristic of the deposit will be permitted. Exposed surfaces shall be free from drill holes or indications of drill holes. The granite slabs in any one section of backslope must be all the same finish.

The granite slabs shall be scabble dressed or sawed to an approximately true plane having no projections or depressions over 13 mm [$\frac{1}{2}$ in] under a 600 mm [2 ft] straightedge or over 25 mm [1 in] under a 1200 mm [4 ft] straightedge. The arris at the intersection of the top surface and exposed front face shall be pitched so that the arris line is uniform throughout the length of the installed slabs. The sides shall be square to the exposed face unless the slabs are to be set on a radius or other special condition which requires that the joints be cut to fit, but in any case shall be so finished that when the stones are placed side by side no space more than 20 mm [$\frac{3}{4}$ in] shall show in the joint for the full exposed height.

Liftpin holes in all sides will be allowed except on the exposed face.

SPECIAL PROVISION SECTION 717 ROADSIDE IMPROVEMENT MATERIAL

717.05 Mulch Binder. Change the third sentence to read as follows:

“Paper fiber mulch may be used as a binder at the rate of 2.3 kg/unit [5 lb/unit].”

SPECIAL PROVISION
SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Under Section 202.02 of the Standard Specifications, ownership of buildings and all equipment, fixtures, and materials therein shall be interpreted as meaning all equipment, fixtures, and materials that are recognized as real property. Any items that are recognized as personal property are excepted and are reserved to the owner. If the bidder is in doubt as to whether any item not listed is real or personal property, they shall request a determination of the matter prior to date on which bids are to be received.

The following list of items is to be reserved to the property owners and/or occupants of Building No. 1

No Reservations

Buildings to be removed under Section 202 - Removing Structures and Obstructions of the contract will be made available to the Contractor as follows: **available July 1, 2005.**

Failure by the Maine State Department of Transportation to meet dates of availability may entitle the Contractor to time extension if requested by the Contractor, in writing, such request indicating delays in construction, if any, caused by changes in availability dates.

With the "Notice to Proceed", or when a building becomes available to the Contractor, the Department will designate whether rodent control measures are required or not.

The Contractor shall not remove a building until the Department has certified it to be free of rodents. Should rodent control measures be required, the Contractor shall procure the extermination services as soon as possible. The Department will re-inspect the building within seven days after the extermination services are performed. The cost of extermination services until the building is found to be rodent free will be paid for as a specialty Pay Item under Section 109.3 - Extra Work.

This building may or may not contain asbestos. Prior to any demotion of building(s) please contact the Property Management Section of Program Services for information regarding any asbestos abatement pertinent to the building(s). The Department will bear all expenses incurred in the abatement of any asbestos containing material.

Each building shall be removed promptly after notification that it is free of rodents. All subsequent inspection costs and extermination services necessary to assure that the building is rodent free at time of removal will be at the expense of the Contractor.

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SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT
(Dredge Materials)

Description: Dredge Material (See MDOT Standard Specifications § 101.2) is regulated as a Special Waste.

Fifty cubic yards or less of Dredge Material Beneficially Used in the area adjacent to and draining into the dredged water body is exempt from Beneficial Use Permits. The Farmingdale 1853.30 project has five locations where Dredge Material will be generated and the Dredge Material total will be less than 50 cubic yards.

Station 12+310 Right	4.5 m ³
Station 12+560 Left	4.8 m ³
Station 12+775 Left	11.6 m ³
Station 12+835 Right	3.3 m ³
Station 12+835 Left	5.2 m ³

The Dredge Material from each location will be Beneficially Used at the site of generation.

CONSTRUCTION REQUIREMENTS

Management and Disposal: The contractor shall Beneficially Use all Dredge Material excavated at site in the area adjacent to and draining into the dredged water body. No more than 38 cubic meters (50 cubic yards) of Dredge Material may be excavated.

Method of Measurement: Dredge Material will be measured by the cubic meter of material removed.

Basis of Payment: Dredge Material Beneficially Used will be paid for at the contract unit price bid for Structural Excavation.

Payment shall be full compensation for excavation, dewatering, managing, transporting, and placement.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
206.061	Structural Earth Excavation	cubic meter

General Note
Dredge Material
Less Than 50 Cubic Yards Exemption
FARMINGDALE-1853.30
15 MARCH 2004

Dredge Material (See MDOT Standard Specifications § 101.2) is regulated as a Special Waste. Fifty cubic yards or less of Dredge Material Beneficially Used in the area adjacent to and draining into the dredged water body is exempt from Beneficial Use Permits. The Contractor shall ensure that all Dredge Material is placed into the fill areas specified by MDOT. No more than fifty cubic yards (38 cubic meters) of Dredge Material may be excavated without authorization from the Engineer.

SPECIAL PROVISION
SECTION 203
BEDDING MATERIAL
(Crushed Stone Fill)

Description This work shall consist of constructing a bedding course of crushed stone in accordance with these specifications and in reasonable close conformity with the width, grade and thickness shown on the plans or established by the Resident.

MATERIALS

Aggregate Crushed stone bedding material shall meet the requirements of ASTM standard specification C33, Standard Specification for Concrete Aggregates.

The aggregate shall meet the following gradation requirements:

Metric [US Customary]	Percent by Weight Passing
25 mm [1 in]	100
19 mm [$\frac{3}{4}$ in]	90 - 100
12.5 mm [$\frac{1}{2}$ in]	20 - 55
9.5 mm [$\frac{3}{8}$ in]	0 - 15
4.75 mm [No. 4]	0 - 5

Construction Requirements The crushed stone fill shall be placed and graded as shown on the plans or as directed by the Resident. The crushed stone shall be compacted as required to insure that all voids in the stone fill are filled, as approved by the Resident.

Method of Measurement Aggregate for crushed stone bedding material will be measured by the cubic meter [cubic yard] complete in place.

Basis of Payment The accepted quantity of crushed stone bedding material will be paid for at the contract unit price per cubic meter [cubic yard] of aggregate complete in place.

Payment will be paid under:

<u>Pay Item</u>	<u>Pay Unit</u>
203.35 Crushed Stone Fill	Cubic Meter[Cubic Yard]

SPECIAL PROVISION
SECTION 304
AGGREGATE BASE AND SUBBASE COURSE
(Aggregate Subbase)

If the Contractor wishes to route public traffic over the completed aggregate subbase course, the course shall be constructed with a minimum 50 mm [2 in] surcharge above the design grade, except as described below. Whenever the surcharge is used, it shall be constructed with material meeting the requirements of Section 703.06(b), Type D Aggregate. Also, whenever, the surcharge is used, it shall be placed on all the aggregate subbase course subjected to public driveways, sidewalks, approach roads, or the outer portions of the shoulders. Removal of the surcharge shall be followed immediately in succession by the fine grading of the aggregate subbase and construction of the next course.

The furnishing, placing, maintaining, and removal of the surcharge will not be paid for directly, but will be considered incidental to the Aggregate Subbase Course pay item.

If salvaged bituminous pavement is placed as the top layer of the aggregate subbase course, a surcharge is not required.

SPECIAL PROVISION
SECTION 304
(Aggregate Base and Subbase Course)

The following replaces Section 304.02, Aggregate, in the Standard Specifications.

304.02 Aggregate. Aggregates shall conform to the requirements specified in the following Subsection of Division 700 – Materials:

Aggregate Subbase	703.06b
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Aggregate subbase shall be material meeting Type D aggregate for the entire 600 mm depth of the subbase layer beneath travel and turning lane pavement materials and the entire 700 mm subbase layer beneath shoulders. For this project, Type E aggregate is not a Contractor option for aggregate subbase within the depths described above. Type D aggregate shall be paid for under Pay Item 304.10.

The portion of the material passing a 75 mm (3 in) sieve at the time it is deposited on the roadway shall conform to the gradation requirements of 703.06b, Type D. Oversized stones shall be removed before depositing on the roadway. Oversized stones are stones that will not pass a 150 mm (6 in) square mesh sieve.

SPECIAL PROVISION
SECTION 310
PLANT MIXED RECYCLED ASPHALT PAVEMENT

310.01 Description This work shall consist of the removal of all bituminous pavement from the existing roadway, hauling the bituminous pavement to an approved location, and processing as per Section 310.020. The gravel base of the existing roadway shall be regraded and compacted to the tolerances shown on the typicals, or as directed by the Resident.

All plant mixed recycled asphalt pavement shall be placed in one or more courses on an approved base and in accordance with these specifications, and in reasonably close conformity with the lines, grades and thicknesses indicated on the plans, or as established by the Resident. Excess recycled material not used in the PMRAP process will become the property and responsibility of the contractor.

MATERIALS

310.020 Composition of Mixture The mixture shall be composed as directed in the job mix formula. The recycled asphalt pavement shall be processed by the Contractor so all material will be no larger than 37.5 mm [1.5 in] and stockpiled so as to minimize segregation. The stockpile shall be free of any materials not generally considered to be asphalt pavement. If additional material is required, the material will be supplied by the State or acquired from the Contractor through the Contract Modification process.

A job mix formula shall be furnished by the Department establishing the percentage of emulsified asphalt cement, Portland Cement, aggregate, and water to be used in the mixture. The JMF additive proportions will be verified by taking a second recycled material sample once the stockpiles have been constructed.

Emulsion, water, aggregate and Portland Cement shall be added in percentage by weight and verified by tank checks done in accordance with the minimum quality control frequencies. Cement additive may be done in dry form or introduced as a cement slurry.

310.021 Emulsified Asphalt The emulsified asphalt shall be grade MS-2, MS-4, CSS-1, or HFMS-2 meeting the requirements of Section 702.04 - Emulsified Asphalt.

310.022 Portland Cement Portland Cement shall be Type I or II meeting the requirements of AASHTO M85.

310.023 Water Water shall be clean and free from deleterious concentrations of acids, alkalis, salts or other organic or chemical substances.

310.024 New Aggregate New aggregate, if required by the contract or job mix, shall meet the requirements of Section 411.02 - Untreated Aggregate Surface Course.

EQUIPMENT

310.030 Mixing Plant The mixing plant shall be of sufficient capacity and coordinated to adequately handle the proposed construction. Either a continuous pugmill mixer or a continuous drum type mixing plant shall be used. If a drum mixing plant is used it shall meet the requirements of Section 401.07. The mixing plant shall be capable of producing a uniform mixture meeting the requirements of the job mix formula.

310.031 Hauling Equipment Trucks used for hauling the mixture shall meet the requirements of Section 401.08.

310.032 Bituminous Pavers Pavers shall meet the requirements of Section 401.09.

310.033 Rollers Rollers shall meet the requirements of Section 401.10.

CONSTRUCTION REQUIREMENTS

310.040 Mixing The recycled asphalt pavement shall be delivered to the mixer at a temperature of not less than 10°C [50°F]. The emulsified asphalt shall meet the mixing temperature requirements listed in Section 702.05 - Application Temperatures. Recycled pavement and emulsified asphalt, and cement shall be proportioned and the mixing time set to produce a mixture in which uniform distribution of the emulsified asphalt and coating of the recycled pavement is obtained.

If a drum type mixing plant is used, the recycled asphalt pavement may be heated prior to being mixed with the emulsified asphalt to a temperature not to exceed 90°C [195°F].

Following mixing, the recycled asphalt pavement material shall be stockpiled and incorporated into the work. The material shall not be stockpiled for longer than 24 hours.

310.041 Weather Limitations The plant mixed recycled asphalt pavement shall be performed when:

- a. PM-RAP operations will be allowed between May 15th and September 15th inclusive in Zone 1 - Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais. PM-RAP will be allowed between May 1st and September 30th inclusive in Zone 2 - Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.
- b. The atmospheric temperature, as determined by an approved thermometer placed in the shade at the recycling location, is 10°C [50°F] and rising.
- c. When there is no standing water on the surface.
- d. During generally dry conditions, or when weather conditions are such that proper pulverizing, adding, mixing, and curing can be obtained using proper procedures, and when compaction can be accomplished as determined by the Resident.
- e. When the surface is not frozen and when overnight temperatures are expected to be above 0°C [32°F].

310.042 Spreading and Finishing The mixture shall be spread and finished in accordance with Section 401.15. Total layer thickness greater than 100 mm [4 in] will be placed in 2 lifts.

310.043 Compaction Compaction of the mixture shall be in accordance with Section 401.16. Rolling may be delayed to avoid lateral displacement as directed by the Resident. See also Section 310.051.

310.044 Joints Joints shall be constructed in accordance with Section 401.17.

310.045 Surface Tolerances The surface tolerances shall be as specified in Section 401.101, except that the maximum allowable variation shall be 10 mm [$\frac{3}{8}$ in]. The surface tolerance in existing gravel areas covered by PMRAP, with no additional gravel, shall be \pm 10 mm [$\frac{3}{8}$ in].

TESTING REQUIREMENTS

310.050 Quality Control The Contractor shall operate in accordance with the approved Quality Control Plan (QCP) to assure a product meeting the contract requirements. The QCP shall meet the requirements of Section 106.6 - Acceptance and this Section. The Contractor shall not begin recycling operations until the Department approves the QCP in writing.

Prior to performing any recycling process, the Department and the Contractor shall hold a Pre-recycle conference to discuss the recycling schedule, type and amount of equipment to be used, sequence of operations, and traffic control. A copy of the QC random numbers to be used on the project shall be provided to the Resident. All field and plant supervisors including the responsible onsite recycling process supervisor shall attend this meeting.

The QCP shall address any items that affect the quality of the Recycling Process including, but not limited to, the following:

- a. JMF(s).
- b. Mixing details, pugmill type, production rates, material processing.
- c. Make and type of paver(s).
- d. Make and type of rollers including weight, weight per inch of steel wheels, and average contact pressure for pneumatic tired rollers.
- e. Testing Plan.
- f. Transportation including process for ensuring that truck bodies are clean and free of debris or contamination that could adversely affect the finished product, type of release agent used (if required)
- g. Laydown operations including procedures for mix design modification, avoiding recycling and curing in inclement weather, material yield monitoring, methods to ensure that segregation is minimized, longitudinal joint construction, procedures to determine the maximum rolling and placing speeds based on field quality control, and achieving the best possible smoothness.
- h. Methods for protecting the finished product from damage and procedures for any necessary corrective action.
- i. Method of grade checks.
- j. Examples of Quality Control forms.
- k. Name, responsibilities, and qualifications of the Responsible onsite Recycling Supervisor experienced and knowledgeable with the process.
- l. Method for calibration/verification of density gauge.
- m. A note that all testing will be done in accordance with AASHTO and MDOT/ACM procedures.
- n. Stockpile procedures including method of moisture control.

The Project Superintendent shall be named in the QCP, and the responsibilities for successful implementation of the QCP shall be outlined.

The Contractor shall sample, test, and evaluate the PMRAP process in accordance with the following procedures and minimum frequencies:

MINIMUM QUALITY CONTROL FREQUENCIES

Test or Action	Frequency	Test Method
Density	1 per 300 m [1000 ft] / lane	ASTM D 2950
Air Temperature	4 per day at even intervals	
Surface Temperature	At the beginning and end of each days operation	
Yield of all materials (Both the daily yield and yield since last test)	4 per day at even intervals	

The Contractor shall submit all QC test reports and summaries in writing, signed by the appropriate technician, and present them to the Department's onsite representative by 1:00 P.M. on the next working day, except when otherwise noted in the QCP due to local restrictions. The Contractor shall make all test results, including randomly sampled densities, available to the Department onsite.

The Contractor shall cease recycling operations whenever one of the following occurs:

- The computed yield differs from the approved Job Mix Formula by 10% or more.
- The Contractor fails to follow the approved QCP.
- The Contractor fails to achieve 98% density after corrective action has been taken.

Recycling operations shall not resume until the Contractor and the Department agree on the corrective action to be taken.

310.051 Test strip The contractor shall assemble all items of equipment for the recycling operation on the first day of the recycling work. The Contractor shall construct a test strip for the project at a location approved by the Resident. The test strip section is required to:

- Demonstrate that the equipment and processes can produce recycled layers to meet the requirements specified in these special provisions;
- Determine the effect on the grading of the recycled material by varying the forward speed of the paving machine; and;
- Determine the sequence and manner of rolling necessary to obtain the compaction requirements and establish a target TMD. The Contractor and the Department will calibrate their respective gauges at this time.

The test strip shall be at least 100 m [300 ft] in length of a full lane-width (or a half-road width).

Full PMRAP production will not begin until an acceptable test strip has been constructed. If a test strip fails to meet the requirements of this specification, the Contractor will be required to repair or replace the test strip to the satisfaction of the Resident. Any repairs, replacement, or duplication of the test strip will be at the Contractor's expense.

Quality Assurance density testing of the recycled material will be performed by the Department using the nuclear method. After the test strip has been placed, it will be rolled as directed until the nuclear density readings show an increase in density of less than 16 kg/m³ [1 pcf] for the final four roller passes. The test strip density will be used as the target density for the recycled material. The remaining PMRAP material

shall be compacted to a minimum density of 98% of the target density as determined in the control section.

ACCEPTANCE TEST FREQUENCY

Property	Frequency	Test Method
In-place Density	1 per 600 m [2000 ft] / lane	ASTM D 2950

310.052 Repairs Repairs and maintenance for the PMRAP layers, during and after the curing period, resulting from damage caused by traffic, weather or environmental conditions, or caused by the Contractor's operations or equipment, shall be completed at no additional cost to the Department.

Low areas will be repaired using a hot mix asphalt shim course. Areas up to 25mm [1 in] high can be repaired by milling or shimming with hot mix asphalt. Areas higher than 25mm [1 in] will be repaired using a hot mix asphalt shim. All repair work will be done with the Resident's approval at the Contractor's expense.

310.06 Curing No new hot mix asphalt pavement or additional layers of PM-RAP shall be placed on the recycled asphalt pavement until a curing period of (4) four days has elapsed. The curing period starts once the PM-RAP has been placed in the roadway. When weather conditions are unfavorable, the curing period may be extended by the Resident.

310.07 Method of Measurement Plant Mixed Recycled Asphalt Pavement shall be measured by the square meter [square yard].

310.08 Basis of Payment The accepted quantity of Plant Mixed Recycled Asphalt Pavement will be paid for at the contract unit price per square meter [square yard], complete in-place which price will be full compensation for furnishing all equipment and labor for removing existing pavement, regrading and compacting existing gravel base, processing, mixing, testing, placing, and compacting, excess material relocation, and for all incidentals necessary to complete the work.

Payments will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
310.23 - 75mm [3 in] Plant Mixed Recycled Asphalt Pavement	Square Meter [yd ²]
310.24 - 100mm [4 in] Plant Mixed Recycled Asphalt Pavement	Square Meter [yd ²]
310.25 - 125mm [5 in] Plant Mixed Recycled Asphalt Pavement	Square Meter [yd ²]
310.26 - 150mm [6 in] Plant Mixed Recycled Asphalt Pavement	Square Meter [yd ²]

SPECIAL PROVISION

SECTION 310

PMRAP

Mix Design

The JMF targets represented in this Special Provision are intended to provide a basis for bidding purposes only. The Department will develop a job mix formula for the PMRAP using the bituminous material salvaged from the project.

The Recycled Pavement on this project will be treated with the following material proportions:

Emulsion	3.0 %
Water needed to ensure proper foaming	3.0 %
Portland cement (Type I or II)	1.5 %

The optimum moisture content for compaction shall be determined by the Department using samples obtained from the recycled stockpiled material prior to addition of the emulsion, by means of AASHTO T 180, Method D.

A contract modification will be executed if percentages change from the requirements above for added emulsion, Portland cement or lime changes by more than 0.10%. Positive and negative price adjustments will be made. The price adjustment will be based upon receipted bills for materials delivered the project site. If a price adjustment is warranted, the contractor will supply the Department with all receipted bills for emulsion, Portland cement or lime for the entire project. Adjustments in water content exceeding the initial targets shall not be paid for directly, but shall be incidental.

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT OVERLAY

Desc. of Course	Grad. Design	Item Number	Bit Cont. % of Mix	Total Thick	No. Of Layers	Comp. Notes
<u>Mainline Travelway, Turnlanes and Shoulders</u>						
Wearing	12.5mm	403.208	N/A	40mm	1	5,7,12,22
Base	19.0mm	403.207	N/A	60mm	1/more	5,7,11,15
<u>Approach Roads</u>						
Wearing	12.5mm	403.208	N/A	40mm	1	5,7,12
Base	19.0mm	403.207	N/A	60mm	1/more	5,7,11,15
<u>Shim</u>						
Shim (as directed)	9.5mm	403.211	N/A	variable	1/more	2,4,9,10
<u>Rail Trail, Sidewalks, Drives, Misc.</u>						
Wearing	9.5mm	403.209	N/A	50mm	2/more	2,3,9,10,13

COMPLEMENTARY NOTES

2. The density requirements are waived.
3. The design traffic level for mix placed shall be <0.3 million ESALS.
5. The aggregate qualities shall meet the design traffic level of 3 to <10 million ESALS for mix placed under this contract.
7. Section 106.6 Acceptance, (1) Method A.
9. Section 106.6 Acceptance, (2) Method C.
10. A **"FINE"** 9.5 mm mix with a gradation above or through the restricted zone shall be used for this item.
11. A mixture meeting the gradation of 12.5 mm hot mix asphalt may be used at the option of the contractor.
12. A mixture meeting the gradation of 9.5 mm hot mix asphalt may be used at the option of the contractor.
13. A mixture meeting the requirements of section 703.09 Grading 'D', with a minimum PGAB content of 6%, and the limits of Special Provision 401, Table 9 (Drives and Sidewalks) for PGAB content and gradation may be substituted for this item. A job mix formula shall be submitted to the department for approval.
15. Any base or binder mix left exposed to traffic over the winter shall have a layer of 12.5 mm mix substituted for the 19mm mix. If this substitution is made, the specified layers may need to be modified, as approved by the Resident.
22. The final pavement surface shall be evaluated for smoothness in accordance with the Standard Specifications, revision of December 2002, Section 402 - Pavement Smoothness.

**Farmingdale-Hallowell
STP-1853(30)X
STP-1853(31)X
Highway Reconstruction
Route 201
October 21, 2004**

Tack Coat

A tack coat of emulsified asphalt, RS-1 or HFMS-1, Item #409.15 shall be applied to any existing pavement or **recycled layer** at a rate of approximately 0.08 L/m², and on milled pavement approximately 0.2 L/m², prior to placing a new course. A fog coat of emulsified asphalt shall be applied between shim / intermediate course and the surface course, at a rate not to exceed 0.08 L/m².

Tack used between new layers of pavement will be paid for at the contract unit price for Item 409.15 Bituminous Tack Coat.

SPECIAL PROVISION
SECTION 525
(Fieldstone Retaining Wall)

Description. This work shall consist of supplying material for and constructing a Fieldstone Retaining Wall (FSRW) in accordance with these specifications and in reasonably close conformity with the lines, grades, design and dimensions shown on the plans and Special Details, or as directed by the Engineer.

An FSRW will consist of the following components:

A leveling pad - a 450 mm (18 inch) thick bed of crushed stone used to provide a level surface to place wall stones.

Wall stones - hard, durable, flat quarried stones or fieldstones with flat faces in a mixture of sizes to be stacked in a compact and stable mass.

Filter Fabric - drainage geotextile as shown on the plans.

Backfill - soil is placed behind the FSRW and crushed stone fill.

Foundation - soil mass supporting the FSRW.

Drainage - underdrain pipe or other positive drainage system approved by the Engineer.

Design Requirements.

Drainage System - A positive drainage system to drain water from behind the wall and reduce freeze-thaw action of subsurface soils shall be included in the design of the FSRW.

Crushed Stone Drainage Layer - A vertical layer of crushed stone shall be placed between the back of the wall stones and the backfill to promote drainage and prevent ice damage to the FSRW.

Design Life - The design life of the wall shall be 50 years unless otherwise noted on the plans.

Leveling Pad Location - The top of the leveling pad shall be designed so that the embedment depth of the FSRW is adequate to maintain stability. The minimum embedment depth to the top of the pad shall be 305 mm (12 inches).

Design Approval. The wall must be similar in appearance to that shown in the attached photograph.

Construction. The FSRW shall be built by a skilled mason thoroughly experienced in this type of wall construction.

1. The foundation shall have sufficient strength to maintain global stability of the FSRW. The insitu soils may be used at the direction of the engineer. Foundation soils shall be brought to the desired grade as required for footing and base dimensions shown on the construction drawings or as directed by the Engineer.
2. The leveling pad shall be placed to the lines and grades as shown on the construction drawings, and shall have a minimum thickness of 450 mm (18 inches). The leveling pad shall extend at least 75 mm beyond the wall stones in all directions. Steps in the leveling pad shall have a minimum overlap of 200 mm (8 inches).
3. The backfill used behind the wall shall meet the requirements of Granular Borrow, MDOT Standard Specification 703.19, Material for Embankment Construction. Backfill shall be placed, spread, and compacted from the back of the crushed stone drainage layer toward the limits of the excavation. Backfill shall be placed in lifts not to exceed 200 mm (8 inches) and compacted with lightweight, hand operated compaction equipment. Backfill beyond 1 meter (3 feet) from the back of the crushed stone shall be compacted to 95% of the maximum density as determined by AASHTO T-180, Method C or D. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be within 2 percentage points dry of optimum.
4. The filter fabric shall be a geotextile meeting the requirements of MDOT Standard Specification Subsection 722.02, Drainage Geotextile. It shall be placed between the native soils and the leveling pad and backfill.
5. The wall shall be constructed of hand fitted fieldstone or quarried stone. The stones shall be placed such that a minimum of 1800 kg of palletized stone is used for each m³ of wall (1.5 tons/cy).
6. Joints shall be level and horizontal; only short vertical joints will be allowed and no more than two vertical joints may be stacked above each other. Stones shall be stacked in a manner such that diagonal joints are kept to a minimum. Joint size in the face of the wall should be kept to a minimum and should not exceed 38 mm (1.5 inches).

7. The top of the wall should be at least 400 mm (16 inches) wide. The width of the base should be approximately $\frac{2}{3}$ of the wall height, with a gradual taper from the base to the top of the wall. Stones shall be placed so the face of the wall has a minimum batter of 1:12.
8. A hand fitted course of cap stones shall be placed on top of the wall. This shall be constructed of stones of similar size and thickness. Each stone in the cap shall be of sufficient size to withstand accidental movement.

Method of Measurement. Field Stone Retaining Wall will be measured by the square meter (square foot) of front surface not to exceed the measurements shown on the plans or as authorized by the Engineer. Vertical dimension limits will be from the top of the leveling pad to the top of the cap stone layer. Horizontal dimension limits will be from each end of the wall.

Basis of Payment. The accepted quantity of Field Stone Retaining Wall will be paid for at the contract unit price per square meter (square foot), complete, cleaned of debris and accepted in place. The unit price shall be full compensation for excavation, backfill, and grading beyond the face of the wall and furnishing all materials, labor, equipment, and other incidentals including drainage necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
525.326	Field Stone Retaining Wall	Square meter (Square foot)

Farmingdale, Route 201
PIN 1853.30
October 20, 2004
Special Provision Section 525



SPECIAL PROVISION
SECTION 534
PRECAST STRUCTURAL CONCRETE
(Precast Structural Concrete Arches, Box Culverts)

534.10 Description The Contractor shall design, manufacture, furnish, and install elements, precast structural concrete structures, arches, or box culverts and associated wings, headwalls, and appurtenances, in accordance with the contract documents.

534.20 Materials Structural precast elements for the arch or box culvert and associated precast elements shall meet the requirements of the following Subsection:

Structural Precast Concrete Units	712.061
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Grout, concrete patching material, and geotextiles shall be one of the products listed on the Department's list of prequalified materials, unless otherwise approved by the Department.

534.30 Design Requirements The Contractor shall design the precast structural concrete structure in accordance with the AASHTO Standard Specifications for Highway Bridges, current edition, by the Allowable Stress Design (ASD). The design live load shall be MS-22.5 (HS-25).

The Contractor shall submit design calculations and shop drawings for the precast structure to the Department for approval. A Registered Professional Engineer, licensed in accordance with State of Maine laws, shall sign and seal all design calculations and drawings. The Contractor shall submit a bridge rating on the Department's Standard Bridge Rating Summary Sheet with the design calculations. Drawings shall conform with Section 105.7 - Working Drawings.

The Contractor shall submit the following items for review by the Resident at least ten working days prior to production:

- A) The name and location of the manufacturer.
- B) Method of manufacture and material certificates.
- C) Description of method of handling, storing, transporting, and erecting the members.
- D) Shop Drawings with the following minimum details:
 - 1) Fully dimensioned views showing the geometry of the members, including all projections, recesses, notches, openings, block outs, and keyways.
 - 2) Details and bending schedules of reinforcing steel including the size, spacing, and location. Reinforcing provided under lifting devices shall be shown in detail.
 - 3) Details and locations of all items to be embedded.
 - 4) Total mass (weight) of each member.

534.40 Construction Requirements The applicable provisions of Subsection 535.10 - Methods and Equipment and Subsection 535.20 - Forms and Casting Beds shall be met.

Manufacture of Precast Units The internal dimensions shall not vary by more than 1 percent from the design dimensions or 38 mm [1 ½ in], whichever is less. The haunch dimensions shall not vary by more than 19 mm [¾ in] from the design dimension. The dimension of the legs shall not vary by more than 6 mm [¼ in] from the dimension shown on the approved shop drawings.

The slab and wall thickness shall not be less than the design thickness by more than 6 mm [¼ in]. A thickness greater than the design thickness shall not be cause for rejection.

Variations in laying lengths of two opposite surfaces shall not be more than 15 mm [⅝ in] in any section, except where beveled ends for laying of curves are specified.

The under-run in length of any section shall not be more than 12 mm [½ in].

The cover of concrete over the outside circumferential reinforcement shall be 50 mm [2 in] minimum. The concrete cover over the inside reinforcement shall be 38 mm [1 ½ in] minimum. The clear distance of the end of circumferential wires shall not be less than 25 mm [1 in] or more than 50 mm [2 in] from the end of the sections. Reinforcement shall be single or multiple layers of welded wire fabric or a single layer of deformed billet steel bars.

Welded wire fabric shall meet the space requirements and contain sufficient longitudinal wires extending through the section to maintain the shape and position of the reinforcement. Longitudinal distribution reinforcement may be welded wire fabric or deformed billet steel bars which meet the spacing requirements. The ends of the longitudinal distribution reinforcement shall be not more than 75 mm [3 in] from the ends of the sections.

The inside circumferential reinforcing steel for the haunch radii or fillet shall be bent to match the radii or fillets of the forms.

Tension splices in the reinforcement will not be permitted. For splices other than tension splices, the overlap shall be a minimum of 300 mm [12 in] for welded wire fabric or billet steel bars. The spacing center to center of the circumferential wires in a wire fabric sheet shall be not less than 50 mm [2 in] or more than 100 mm [4 in]. For the wire fabric, the spacing center to center of the longitudinal wires shall not be more than 200 mm [8 in]. The spacing center to center of the longitudinal distribution steel for either line of reinforcing in the top slab shall be not more than 375 mm [15 in].

The members shall be free of fractures. The ends of the members shall be normal to the walls and centerline of the section, within the limits of variation provided, except where beveled ends are specified. The surfaces of the members shall be a smooth steel form or troweled surface finish, unless a form liner is specified. The ends and interior of the assembled structure shall make a continuous line of members with a smooth interior surface.

Defects which may cause rejection of precast units include the following:

- 1) Any discontinuity (crack or rock pocket etc.) of the concrete which could allow moisture to reach the reinforcing steel.
- 2) Rock pockets or honeycomb over 4000 mm² [6 in²] in area or over 25 mm [1 in] deep.
- 3) Edge or corner breakage exceeding 300 mm [12 in] in length or 25 mm [1 in] in depth.
- 4) Extensive fine hair cracks or checks.
- 5) Any other defect that clearly and substantially impacts the quality, durability, or maintainability of the structure as measured by accepted industry standards.

The Contractor shall store and transport members in a manner to prevent cracking or damage. The Contractor shall not place precast members in an upright position until a compressive strength of at least 30 MPa [4350 psi] is attained.

Installation of Precast Units The Contractor shall not ship precast members until sufficient strength has been attained to withstand shipping, handling and erection stresses without cracking, deformation, or spalling (but in no case less than 30 MPa [4350 psi]).

The Contractor shall set precast members on 12 mm [½ in] neoprene pads during shipment to prevent damage to the section legs. The Contractor shall repair any damage to precast members resulting from shipping or handling by saw cutting a minimum of 12 mm [½ in] deep around the perimeter of the damaged area and placing a polymer-modified cementitious patching material.

When footings are required, the Contractor shall install the precast members on concrete footings that have reached a compressive strength of at least 20 MPa [2900 psi]. The Contractor shall construct the completed footing surface to the lines and grades shown on the plans. When checked with a 3 m [10 ft] straightedge, the surface shall not vary more than 6 mm [¼ in] in 3 meters [10 ft]. The footing keyway shall be filled with a non-shrink flowable cementitious grout with a design compressive strength of at least 35 MPa [5075 psi].

The Contractor shall fill holes that were cast in the units for handling, with either Portland cement mortar, or with precast plugs secured with Portland cement mortar or other approved adhesive. The Contractor shall completely fill the exterior face of joints between precast members with an approved material and cover with a minimum 300 mm [12 in] wide joint wrap. The surface shall be free of dirt and deleterious materials before applying the filler material and joint wrap. The Contractor shall install the external wrap in one continuous piece over each member joint, taking care to keep the joint wrap in place during backfilling. The Contractor shall seal the joints between the end unit and attached elements with a non-woven geotextile. The Contractor shall install and tighten the bolts fastening the connection plate(s) between the elements that are designed to be fastened together as designated by the manufacturer.

Final assembly shall be approved by the manufacturer's representative prior to backfilling. The Contractor shall backfill the structure in accordance with the manufacturer's instructions and the Contract documents. The Contractor shall uniformly distribute backfill material in

layers of not more than 200 mm [8 in] depth, loose measure, and thoroughly compact each layer using approved compactors before successive layers are placed. The Contractor shall compact gravel borrow backfill in accordance with Section 203.12 - Construction of Earth Embankment with Moisture and Density Control, except that the minimum required compaction shall be 95 percent of maximum density as determined by AASHTO T99, Method C or D. The Contractor shall place and compact backfill without disturbance or displacement of the wall units, keeping the fill at approximately the same elevation on both sides of the structure. Whenever a compaction test fails, the Contractor shall not place additional backfill over the area until the lift is re-compacted and a passing test achieved.

The Contractor shall use hand-operated compactors within 1.5 m [5 ft] of the precast structure as well as over the top until it is covered with at least 300 mm [12 in] of backfill. Equipment in excess of 11 Mg [12 ton] shall not use the structure until a minimum of 600 mm [24 in] of backfill cover is in place and compacted.

534.50 Method of Measurement The Department will measure Precast Structural Concrete Arch or Box Culvert for payment per Lump Sum each, complete in place and accepted.

534.60 Basis of Payment The Department will pay for the accepted quantity of Precast Structural Concrete Arch or Box Culvert at the Contract Lump Sum price, such payment being full compensation for all labor, equipment, materials, professional services, and incidentals for furnishing and installing the precast concrete elements and accessories. Falsework, reinforcing steel, jointing tape, grout, cast-in-place concrete fill or grout fill for anchorage of precast wings and/or other appurtenances is incidental to the Lump Sum pay item. Cast-in-place concrete, reinforcing steel in cast-in-place elements, excavation, backfill material, and membrane waterproofing will be incidental to the Lump Sum pay item. Excavation will be measured and paid for separately under the provided Contract pay item, Common Excavation. Pay adjustments for quality level will not be made for precast concrete.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
534.70 Precast Structural Concrete Arch	Lump Sum
534.71 Precast Concrete Box Culvert	Lump Sum
534.75 Extension of Existing Box Culvert	Lump Sum

SPECIAL PROVISION
SECTION 604
MANHOLES, INLETS, AND CATCH BASINS
(Behind Curb Catch Basin)

This section of the Standard Specifications is amended by the addition of the following:

Description. This work shall consist of modification of a standard manhole (MDOT Item 604.15) to include an offset catch basin attachment for the purpose of achieving the required clearances from underground utilities. The offset catch basin grate and frame materials and location of installation shall comply with MDOT standards for Item 604.072 Catch Basin Type B1-C. Bowl, elbow and connection requirements to the manhole structure shall be constructed using Neenah R-3223 and R-3226 Series components (Neenah Foundry Company Catalog "R" 12th Edition, page 131) or similar to be approved by the Resident. Installation of components shall be in accordance with manufacturer's requirements and connection of components to standard manhole shall be in accordance to MDOT standards for connection of storm drain piping to manhole structures.

Work includes the installation of the standard manhole, connection of associated underdrain pipes and the offset catch basin components including grate, frame, elbows, connecting pipes and associated foundation materials as required by the manufacturer.

Construction Requirements. The proposed manhole structure and associated offset catch basin components shall be installed per MDOT Standard Specifications for Section 604. The location of the manhole portion of the unit shall be installed as designated on the plans. The offset catch basin grate, frame and associated components shall be installed at the location designated on the plans, with the location of the grate and subsequent components for attachment to the manhole to be determined in the same manner as the location of the grate for a standard catch basin, 604.072 Catch Basin Type B1-C.

Method of Measurement. Item will be measured by each unit completed and accepted in place.

Basis of Payment. The accepted quantity of offset catch basins will be paid for at the contract unit price each, which payment shall be in accordance with Section 604.

Payment shall be made under:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
604.2402	Behind Curb Catch Basin	Each (EA)

SPECIAL PROVISION
SECTION 606
GUARDRAIL
(Remove and Dispose)

This Section of the Standard Specifications is amended by the addition of the following:

Description This work shall consist of the removing and disposing of existing beam guardrail, as indicated on the plans.

CONSTRUCTION REQUIREMENTS

General The existing guardrail shall be removed and shall become the property of the Contractor to be disposed of off the project.

Method of Measurement Guardrail, Remove and Dispose, will be measured by the meter [foot] of rail.

Basis of Payment The quantity of Guardrail, Remove and Dispose, will be paid for at the contract unit price per meter [foot].

Payment will made under:

<u>Pay Item</u>	<u>Pay Unit</u>
606.363 Guardrail, Remove and Dispose	Meter [Foot]

SPECIAL PROVISION
SECTION 607
FENCES
(Ornamental Picket Fence)

Description. This work shall consist of fabricating and installing an ornamental wood picket fence in accordance with the specifications and in reasonably close conformity with the dimensions, lines and grades shown on the plans or as directed by the Resident.

Materials. Fence boards, rails and posts shall be of #1 grade northern or eastern white cedar, planed four sides. Wood fasteners, steel angles, bolts and other incidental hardware shall be galvanized in accordance with AASHTO M232 (ASTM A153), unless otherwise called for on the plans or directed by the Resident. Wood stain shall be Sherwin-Williams "Woodscapes" house stain, or equal.

Placement. The fence is to be fabricated and placed in close conformity with the lines and grades shown on the plans.

Method of Measurement. Ornamental picket fence will be measured by the meter accepted in place. Measurement will be along the gradient of the fence from outside to outside of the end posts.

Basis of Payment. The accepted quantity of ornamental picket fence will be paid for at the contract unit price per meter, complete and accepted in place. The unit price shall be full compensation for furnishing all materials, labor, equipment and other incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
607.42 Ornamental Picket Fence	Meter

SPECIAL PROVISIONS
SECTION 621
LANDSCAPE

(Plant Species Specification and Quantities List)

The following list of items provides the estimated quantities for use on this project. The scientific name of the plant material is provided along with the common name in parenthesis.

The contractor shall follow MDOT Standard Specifications Rev. December, 2002 for landscape materials and installation procedures (sec 621).

The MDOT Landscape Architect or his designee will be available to inspect plant materials and stake the location of plant materials at the time of planting.

In accordance with Section 104.5.9, a separate Performance Bond will not be required for the Landscape portion of this contract. A Maintenance Bond for a Two-Year Establishment period in the full value of the planting contract shall be included in this project.

PLANT MATERIALS

ITEM NO	Description	Unit	Quantity	Total
621.025	Evergreen Trees 3' – 4' (1500 mm – 1800 mm) Group A	Ea.		18
	Pinus strobus (Eastern White Pine)		6	
	Thuja occidentalis 'Nigra' ('Nigra' Dark American Arborvitae)		12	
621.026	Evergreen Trees 3' – 4' (1500 mm – 1800 mm) Group A			6
	Picea abies (Norway Spruce)		6	
621.027	Evergreen Trees 3' – 4' (1500 mm – 1800 mm) Group C	Ea.		3
	Picea pungens (Colorado Spruce)		3	
621.032	Evergreen Trees 4' – 5' (1200 mm – 1500 mm) Group B	Ea.		6
	Picea abies (Norway Spruce)		6	
621.121	Small Deciduous Trees 5' – 6' (1500 mm – 1800 mm) Group A Cont.			30
	Malus floribunda 'Spring Snow' ('Spring Snow' Flowering Crabapple)		10	
	Pyrus calleryana 'Aristocrat' 'Aristocrat' Pear		10	
	Syringa reticulata 'Ivory Silk' ('Ivory Silk' Japanese Tree Lilac)		10	

621.126	Small Deciduous Trees 6' – 8' (1800 mm – 2400 mm) Group A	Ea.		18
	Acer saccharum (Sugar Maple)		8	
	Fraxinus pennsylvanica 'Patmore'		10	
621.267	Large Deciduous Trees 1 ¾" – 2" cal. (45 mm - 50 mm cal) B&B group A	Ea.		18
	Acer rubrum (Red/Swamp Maple)		6	
	Acer saccharum (Sugar Maple)		6	
	Quercus rubra (Northern Red Oak		6	
621.389	Dwarf Evergreens 15" – 18" (375 mm 450 mm) Cont. Group A	Ea.		42
	Taxus media 'Hatfieldii' (Hatfield Yew)		36	
	Pinus mugho mugho (Dwarf Mugho Pine)		6	
621.510	Deciduous Shrubs 15" – 18" (375 mm - 450 mm) Group A	Ea.		244
	Cornus sericea (Red Twig Dogwood)		50	
	Euonymus alatus compacta (Dwarf Burning Bush)		12	
	Forsythia suspensa 'Meadowlark' ('Meadowlark' Forsythia)		60	
	Ligustrum amurense (Common Privet)		24	
	Philadelphus coronarius (Mock Orange)		50	
	Rosa Rugosa (Beach Rose)		36	
	Spiraea 'Anthony Waterer'		12	
621.547	Deciduous Shrubs 2' – 3' (900 mm – 1200 mm) Group A	Ea.		24
	Forsythia suspensa 'Meadowlark' ('Meadowlark' Forsythia)		12	
	Syringa vulgaris (Common Lilac)		12	
621.710	Herbaceous Perennials Group A No. 1 Cont. (150 mm)	Ea.		120
	Hemerocallis x. hybrida 'Happy Returns'		120	
621.8	Two-Year Establishment Period	LS		LS
	Two-Year Maintenance Establishment Period		LS	

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SPECIAL PROVISION
SECTION 635
PREFABRICATED GRAVITY RETAINING WALL
(Prefabricated Concrete Block Gravity Wall)

The following replaces Section 635 in the Standard Specifications:

Description. This work shall consist of the design and construction of a prefabricated concrete block gravity wall in accordance with these specifications and in reasonably close conformance with the lines and grades shown on the plans, or established by the Engineer. Blocks shall be made of wet cast concrete made from Portland cement, water, chemical admixtures, and aggregates.

Included in the scope of the prefabricated gravity wall construction are: geotechnical design of any wall with a maximum height greater than 1.37 meters (4.5 feet) or as specified on the wall detail sheet, all grading necessary for wall construction, compaction of the wall foundation, backfill, piped drainage, construction of leveling pads, and block wall installation.

The prefabricated gravity wall design shall follow the general dimensions of the wall envelope shown in the contract plans. The minimum wall embedment shall be at or below the elevation shown on the plans or as specified by the designer. The top of the upper row of blocks shall be at or above the top of the face elevation shown on the plans.

The Contractor shall require the design-supplier to supply an on-site, qualified experienced technical representative to advise the Contractor concerning proper installation procedures. The technical representative shall be on-site during initial stages of installation and thereafter shall remain available for consultation as necessary for the Contractor or as required by the Engineer. The work done by this representative is incidental to the construction of the wall.

MATERIALS

Materials. Materials shall meet the requirements of the following subsections of Division 700 - Materials:

Aggregate for crushed stone surface	703.12
Gravel Borrow	703.20
Underdrain Pipe	706.06 or 706.09
Reinforcing Steel	709.01

The Contractor is cautioned that all of the materials listed are not required for every prefabricated concrete block gravity wall. The Contractor shall furnish the Engineer a Certificate of Compliance certifying that the applicable materials comply with this section of the specifications. Materials shall meet the following additional requirements:

Concrete Units. Materials shall conform to the requirements of Supplemental Specification Section 502 Structural Concrete Class A except that the requirements for Chloride Permeability shall not apply

- A. The minimum 28 day compressive strength requirement shall be 30 MPa (4350 psi) for any individual unit and 31.7 MPa (4600 psi) for the average of 3 units
- B. Unit Depth - 1040 mm (41 inches), minimum for an unreinforced wall, or 710 mm (28 inches) minimum for a geogrid reinforced wall.
- C. Unit Width - 1160 mm (46 inches), minimum at the face
- D. Unit Height - 450 mm (18 inches), minimum at the face for a standard block
- E. Tolerances - formed dimensions shall not vary more than 2 mm (1/16") from the Manufacturer's published tolerances.
- F. Face Texture - formed finish on all exposed surfaces.
- G. Color - pigment shall be added during the casting process of the concrete unit to achieve a consistent shade of gray or other color as determined by the Engineer.
- H. Imperfections - All units shall be sound and free of cracks or other defects that would interfere with the proper placing of each unit or significantly impair the strength or performance of the construction. Minor cracks (e.g. no greater than 0.5 mm (0.02 inches) in width and no longer than 25% of the unit height) incidental to the method of manufacture or minor chipping resultant from shipment and delivery, are not grounds for rejection.

Exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 3 meters (10 feet) under diffused lighting.

- I. Other Constituents – air entraining agents, coloring pigments, integral water repellents, pozzolans, and other constituents shall be previously established as suitable for use in Class A concrete and shall conform to applicable AASHTO standards or, shall be shown by test or experience to be not detrimental to the appearance or durability of the concrete units or any material customarily used in retaining wall construction.
- J. Other Units – end blocks, steps, caps and other wall units shall be supplied by the same supplier as the block units and cast in strict accordance with manufacturer's requirements and with Sections A through I above.

Geogrid Reinforcing. The structural geogrid reinforcing shall meet the following requirements:

- A. The geogrids shall be a regular polymeric grid structure of select high density polyethylene (HDPE), polypropylene (PP), or polyester (PET) resin manufactured by Tensar, Huesker, Strata Systems, Mirafi, or approved equal.
- B. The geogrid shall conform to the following criteria:
 - B1. PP and HDPE: Minimum retained strength of 70 % after 150 hours, per ASTM D-4355.
 - B2. HDPE: Grade = E-4, E-5, E-8, E-9, E-10, E-11, J-3, J-4, J-5, P-24, or P-34, per ASTM D-1248.
 - B3. PET: Molecular weight (M_n) > 25,000 g/mole, Inherent Viscosity Method per ASTM D-4603, with Correlation or Determined Directly Using Gel Permeation Chromatography.
 - B4. PET: Carboxyl end group (CEG) < 30 meg/kg, GRI:GG7
 - B5. All polymers: Minimum Weight per Unit Area of 270 g/m², per ASTM D-5261
 - B6. A default total reduction factor for creep, durability, and installation damage of 7 may be used in design, provided the criteria of B2 through B5 are satisfied and B1 is adjusted to 70% after 500 hours is satisfied.
- C. The Long Term Tensile Strength (T_{al}) of the geogrid shall be determined by reducing the Ultimate Strength (T_u), as determined using ASTM 4595 or GRI:GG1, by the product of the reduction factors for durability, installation damage, and creep, denoted RF_D , RF_{ID} , and, RF_{CR} , respectively. The required tests used to determine the reduction factors, minimum value to be used in design if test value is less than minimum, and maximum value to be used in design in the absence of test data are summarized below.

Reduction Factor	Test	Minimum/Maximum
Durability (RF_D)	HDPE and PP: ASTM D4355 PET: GRI:GG7	1.1/2.0
Installation Damage(RF_{ID})	Site installation damaged tests, similar to ASTM D-5818	1.1/3.0
Creep(RF_{CR})	ASTM D-5262	HDPE = 2.5/5.0 PP = 4.0/5.0 PET = 2.0/2.5

- D. The pullout resistance factors, F^* and α , used in pullout design, shall be determined for the proposed reinforcement and wall system, with soil similar to the specified backfill material of this Section. The pullout resistance factors shall be determined in accordance with Appendix A of FHWA SA-96-071

"Mechanical Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines." In the absence of test data, empirical relationships may be used to determine the pullout resistance factors, any empirical relationships used in design shall be referenced in the design calculations.

- E. Long-term connection strength between the geogrid reinforcement and the modular blocks shall be checked, per AASHTO-Standard Specifications for Highway Bridges, Section 5.8.
- F. The Contractor shall submit a Manufacturer's Certificate, which shall state that the furnished geogrid(s) meets the requirements of this Section, as evaluated by the manufacturer's quality control program. Included with the certificates, shall be the design parameters and required properties referenced in this Section. The certificates shall be attested to by a person having legal authority to bond the manufacturer. In case of dispute over validity of values, the Engineer can require the Contractor to supply test data from a Department approved laboratory to support the certified values submitted.

Geogrid Connection. Reinforcing bar used in the geogrid connection shall be 1/2" diameter epoxy coated reinforcing bar, coated on the ends and meeting the requirements of Section 503, Reinforcing Steel. Installation shall be in accordance with manufacturer's recommendations.

Concrete Leveling Pad. Concrete shall be Class A conforming to the requirements of Section 502 Structural Concrete. Unless otherwise specified, concrete for leveling pads shall be accepted under Method "C" requirements, except that the requirements for Chloride Permeability shall not apply.

Reinforced and Select Backfill Material. Reinforced and select backfill material placed behind the concrete units shall be Gravel Borrow conforming to the requirements of Subsection 703.20. Material between blocks must be gravel borrow as above or crushed stone meeting the requirements of Subsection 703.12. If Gravel Borrow is used between blocks, geotextile shall be placed behind vertical joints to prevent loss of granular material between blocks. Compliance with the gradation requirements shall be the responsibility of the Contractor, who shall furnish a copy of the backfill test results prior to construction. If crushed stone is used between blocks no geotextile is required behind vertical joints.

Materials Certificate Letter. The Contractor, or the supplier as his agent, shall furnish the Engineer a Materials Certificate Letter for the above materials, including the backfill material, in accordance with Section 700 of the Standard Specifications. A copy of all test results performed by the Contractor or his supplier necessary to assure contract compliance shall also be furnished to the Engineer. The Engineer will base acceptance upon the materials Certificate Letter, accompanying test reports, and visual inspection.

DESIGN REQUIREMENTS

Design Requirements. The Prefabricated Concrete Block Gravity Wall shall be designed by a Professional Engineer registered in the State of Maine. The design to be performed by the wall system supplier shall be in accordance with AASHTO Standard Specifications for Highway Bridges, current edition, except as required herein. Thirty days prior to beginning construction of the wall, the design computations shall be submitted to the Engineer for review by the Department. The design by the wall system supplier shall consider the stability of the wall as outlined below:

(a) Safety Factors. The minimum factors of safety shall be as follows:

- | | |
|---|-----|
| 1. Overturning: | 2.0 |
| 2. Sliding: | 1.5 |
| 3. Stability of temporary construction slope: | 1.2 |
| 4. Ultimate bearing capacity: | 2.0 |
| 5. Reinforcement pullout | 1.5 |
| 6. Reinforcement rupture | 1.5 |
| 7. Reinforcement connection failure | 2.0 |

(b) Backfill Soil Parameters. For overturning and sliding stability calculations, earth pressure shall be assumed acting on a vertical plane dropping from the back of the highest block or geogrid. Stability shall also be calculated at each level within the wall.

These unit weights and friction angles are based on a backfill meeting the requirements for select backfill in this specification. Backfill behind the concrete units and reinforced fill zone shall be assumed to have a unit weight of 1922 kg/m^3 [120 pcf] and a friction angle of 30 degrees. The friction angle of the foundation soils shall be assumed to be 30 degrees unless otherwise noted on the plans. The friction angle of the select backfill used in the reinforced fill zone for internal stability design of the wall shall be assumed to be 34° unless noted otherwise on the plans.

(d) External loads which affect the internal stability such as those applied through traffic, slope surcharge, hydrostatic and seismic loads shall be accounted for in the design.

(e) The actual applied bearing pressures under the prefabricated concrete block gravity wall shall be clearly indicated on the design drawings.

(f) Stability during Construction. The factors of safety to be used for stability during construction stages shall be the same factors used for the design of the wall.

- (g) Hydrostatic forces. Unless specified otherwise, when a design high water surface is shown on the plans at the face of the wall, the design stresses calculated from that elevation to the bottom of wall must include a 0.9 meter [3 foot] minimum differential head of saturated backfill.
- (h) Design Life. Design life shall be in accordance with AASHTO requirements.
- (i) Depth of embedment. Depth of embedment required for frost protection and stability shall be shown on the plans supplied by the designer. Minimum embedment depth shall be 300 mm for a non-critical wall.
- (j) Drainage system. Piped drainage shall be designed to collect and dispose of water from the base of the reinforced soil zone and the backfill. This shall outlet into surrounding drainage systems or ditches.
- (k) The design shall provide for end blocks, cap blocks, or other concrete units necessary to give the wall a finished appearance.

Submittals. The Contractor shall supply wall design computations, wall details, dimensions, quantities, and cross sections necessary to construct the wall. Thirty days prior to beginning construction of the wall, the design computations and wall details shall be submitted to the Engineer for review. Mix design information shall be submitted including aggregate source, current gradation, aggregate quality information and concrete unit weight. If geotechnical design is required, the fully detailed plans shall be prepared in conformance with Subsection 105.7 of the Standard Specifications and shall include, but not be limited to the following items:

- I. A plan and elevation sheet or sheets for each wall, containing the following: elevations at the top of leveling pads, the distance along the face of the wall to all steps in the leveling pads, the location of the original and final ground line.
- II. All details for foundations and leveling pads, including details for steps in the leveling pads, as well as allowable and actual maximum bearing pressures shall be provided.
- III. The wall plans shall be prepared and stamped by a Professional Engineer. Four sets of design drawings and detail design computations shall be submitted to the Engineer.
- IV. Prior to the beginning of construction, the contractor shall supply the Engineer with two copies of the design-supplier's Installation Manual. In addition, the Contractor shall have two copies of the Installation Manual on the project site.

CONSTRUCTION REQUIREMENTS

Excavation. The excavation and use as fill disposal of all excavated material shall meet the requirements of Section 203 -- Excavation and Embankment, except as modified herein.

Foundation. The area upon which the prefabricated block gravity wall structure is to rest, and within the limits shown on the submitted plans, shall be graded for a width equal to, or exceeding, the length of the blocks. Prior to wall and leveling pad construction, this foundation material shall be compacted to at least 95 percent of maximum laboratory dry density. Frozen and unsuitable soil shall be removed and replaced with gravel borrow compacted to 95% of T-180.

A concrete leveling pad shall be constructed as indicated on the plans. Dimensions may be modified per the wall supplier's recommendations, with written approval of the Resident Engineer. The leveling pad shall be cast to the design elevations as shown on the plans, or as required by the wall supplier upon written approval of the Resident Engineer. Allowable elevation tolerances are +3 mm [+0.01 foot] and -6 mm [-0.02 foot] from the design elevations. Leveling pads which do not meet this requirement shall be repaired or replaced as directed by the Engineer at no additional cost to the Department. Placement of wall units may begin after the strength of the concrete leveling pad reaches 6900 kPa (1000 psi) or is adequate to support the proposed loads. Contractor may begin placement of concrete block units after 12 hours at his own risk.

Method and Equipment. Prior to erection of the prefabricated concrete block wall, the Contractor shall furnish the Engineer with detailed information concerning the proposed construction method and equipment to be used. The erection procedure shall be in accordance with the manufacturer's instructions. Any units that are damaged due to handling will be replaced at the Contractor's expense.

Installation of Wall Units. A field representative from the wall system being used shall be available, as needed, during the erection of the wall. The services of the representative shall be at no additional cost to the project. Horizontal joint fillers shall be installed as needed.

The maximum offset in any unit horizontal joint shall be 6.5 mm [1/4 inch]. The prefabricated wall blocks shall be installed to a tolerance of plus or minus 20 mm in 3 m [3/4 inch in 10 feet] in vertical alignment and horizontal alignment.

Select Backfill Placement. Backfill placement shall closely follow the erection of each row of prefabricated wall units. The Contractor shall decrease the lift thickness if necessary to obtain the specified density. The maximum lift thickness shall be 200 mm [8 inches] (loose). Gravel borrow backfill shall be compacted in accordance with Subsection 203.12 except that the minimum required compaction shall be 95 percent of maximum density as determined by AASHTO T99 Method C or D. Backfill compaction shall be accomplished without disturbance or displacement of the wall blocks. Sheepsfoot rollers will not be allowed. Whenever a compaction test fails, no additional backfill shall be placed over the area until the lift is recompacted and a passing test achieved.

The moisture content of the backfill material prior to and during compaction shall be uniform throughout each layer. Backfill material shall have a placement moisture content less than or equal to the optimum moisture content. Backfill material with a placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniform and acceptable throughout the entire lift. The optimum moisture content shall be determined in accordance with AASHTO T99, Method C or D. At the end of the day's operations, the Contractor shall shape the last level of backfill so as to direct runoff of rain water away from the wall face.

Method of Measurement. Prefabricated Modular Gravity Wall will be measured by the square meter of front surface not to exceed the dimensions shown on the contract plans unless authorized by the Resident Engineer. Vertical and horizontal dimensions will be from the edges of the blocks. No field measurements for computations will be made unless the Resident Engineer specifies, in writing, a change in the limits indicated on the plans.

Basis of Payment. The accepted quantity of Prefabricated Modular Gravity Retaining Wall will be paid for at the contract unit price per square meter complete in place. Payment shall be full compensation for furnishing geotechnical design as required, all labor, equipment and materials including all precast concrete units, hardware, joint fillers, woven geotextile, geogrid and steel, drainage pipe, and technical field representative.

Cost of cast-in-place concrete for leveling pad will not be paid for separately, but will be considered incidental to the Prefabricated Modular Gravity Wall. Excavation, foundation material and backfill material will all be incidental to the Prefabricated Modular Gravity Wall.

There will be no allowance for excavating and backfilling for the Prefabricated Modular Gravity Wall beyond the limits shown on the approved submitted plans, except for excavation required to remove unsuitable subsoil in preparation for the foundation. Payment for excavating unsuitable subsoil shall be full compensation for all costs of pumping, drainage, sheeting, bracing and incidentals for proper execution of the work.

Payment will be made under:

Pay Item	Pay Unit
635.31 Prefabricated Concrete Block Gravity Wall	Square Meter(square foot)

SPECIAL PROVISION
SECTION 635
PREFABRICATED BIN TYPE RETAINING WALL
(Prefabricated Concrete Modular Gravity Wall)

The following replaces Section 635 in the Standard Specifications:

Description. This work shall consist of the construction of a prefabricated modular reinforced concrete gravity wall in accordance with these specifications and in reasonably close conformance with the lines and grades shown on the plans, or established by the Resident.

Included in the scope of the Prefabricated Concrete Modular Gravity Wall construction are: all grading necessary for wall construction, excavation, compaction of the wall foundation, backfill, construction of leveling pads, and segmental unit erection.

The Prefabricated Concrete Modular Gravity Wall design shall follow the general dimensions of the wall envelope shown in the contract plans. The top of the leveling pad shall be located at or below the theoretical leveling pad elevation. The minimum wall embedment shall be at or below the elevation shown on the plans. The top of the face panels shall be at or above the top of the panel elevation shown on the plans.

The Contractor shall require the design-supplier to supply an on-site, qualified experienced technical representative to advise the Contractor concerning proper installation procedures. The technical representative shall be on-site during initial stages of installation and thereafter shall remain available for consultation as necessary for the Contractor or as required by the Resident. The work done by this representative is incidental.

MATERIALS

Materials. Materials shall meet the requirements of the following subsections of Division 700 - Materials:

Gravel Borrow	703.20
Preformed Expansion Joint Material	705.01
Reinforcing Steel	709.01
Structural Pre-cast Concrete Units	712.061
Drainage Geotextile	722.02

The Contractor is cautioned that all of the materials listed are not required for every Prefabricated Concrete Modular Gravity Wall. The Contractor shall furnish the Resident a Certificate of Compliance certifying that the applicable materials comply with this section of the specifications. Materials shall meet the following additional requirements:

Concrete Units:

Tolerances. In addition to meeting the requirements of 712.061, all prefabricated units shall be manufactured with the following tolerances. All units not meeting the listed tolerances will be rejected.

1. All dimensions shall be within (edge to edge of concrete) 5 mm [$\pm 3/16$ inch].
2. Squareness. The length differences between the two diagonals shall not exceed 8 mm [$5/16$ inch].
3. Surface Tolerances. For steel formed surfaces, and other formed surface, any surface defects in excess of 2 mm [$.08$ inch] in 1.2 m [4 feet] will be rejected. For textured surfaces, any surface defects in excess of 8 mm [$5/16$ inch] in 1.5 m [5 feet] shall be rejected.

Joint Filler. (where applicable) Joints shall be filled with material approved by the Resident and supplied by the approved Prefabricated Concrete Modular Gravity Wall supplier. A 100 mm [4 inch] wide, by 13 mm [0.5 inch] preformed expansion joint filler shall be placed in all horizontal joints between facing units. In all vertical joints, a space of 6 mm [0.25 inch] shall be provided. All Preformed Expansion Joint Material shall meet the requirements of subsection 502.03.

Woven Drainage Geotextile. Woven drainage geotextile 300 mm [12 inch] wide shall be bonded with an approved adhesive compound to the back face, covering all joints between units, including joints abutting concrete structures. Geotextile seam laps shall be 150 mm [6 inch] minimum. The fabric shall be secured to the concrete with an adhesive satisfactory to the Resident. Dimensions may be modified per the wall supplier's recommendations, with written approval of the Resident.

Concrete Shear Keys. (where applicable) Shear keys shall have a thickness at least equal to the pre-cast concrete stem.

Concrete Leveling Pad. Cast-in-place concrete shall be Class A concrete conforming to the requirements of Section 502 Structural Concrete. The horizontal tolerance on the surface of the pad shall be 6 mm [0.25 inch] in 3 m [10 feet]. Dimensions may be modified per the wall supplier's recommendations, with written approval of the Resident.

Backfill and Bedding Material. Bedding and backfill material placed behind and within the reinforced concrete modules shall be gravel borrow conforming to the requirements of Subsection 703.20. The backfill materials shall conform to the following additional requirements: the plasticity index (P.I.) as determined by AASHTO T90 shall not exceed 6. Compliance with the gradation and plasticity requirements shall be the responsibility of the Contractor, who shall furnish a copy of the backfill test results prior to construction.

The backfilling of the interior of the wall units and behind the wall shall progress simultaneously. The material shall be placed in layers not over 200 mm [8 inches] in depth, loose measure, and thoroughly compacted by mechanical or vibratory compactors. Puddling for compaction will not be allowed.

Materials Certificate Letter. The Contractor, or the supplier as his agent, shall furnish the Resident a Materials Certificate Letter for the above materials, including the backfill material, in accordance with Section 700 of the Standard Specifications. A copy of all test results performed by the Contractor or his supplier necessary to assure contract compliance shall also be furnished to the Resident. Acceptance will be based upon the materials Certificate Letter, accompanying test reports, and visual inspection by the Resident.

DESIGN REQUIREMENTS

Design Requirements. The Prefabricated Concrete Modular Gravity Wall shall be designed by a Professional Resident. The design to be performed by the wall system supplier shall be in accordance with AASHTO Standard Specifications for Highway Bridges, current edition, except as required herein. Thirty days prior to beginning construction of the wall, the design computations shall be submitted to the Resident for review by the Department. The design by the wall system supplier shall consider the stability of the wall as outlined below:

(a) Safety Factors. The minimum factors of safety shall be as follows:

- | | |
|---|-----|
| 1. Overturning: | 2.0 |
| (No reduction of the overturning safety factor shall be allowed for walls founded on rock.) | |
| 2. Sliding: | 1.5 |
| 3. Stability of temporary construction slope: | 1.2 |
| 4. Ultimate bearing capacity: | 2.0 |
| 5. Pullout Resistance | 1.5 |

(b) Backfill and Wall Unit Soil Parameters. For overturning and sliding stability calculations, earth pressure shall be assumed acting on a vertical plane rising from the back of the lowest wall stem. For overturning, the unit weight of the backfill within the wall units shall be limited to 1602 kg/m^3 [100 pcf]. For sliding analyses, the unit weight of the backfill within the wall units can be assumed to be 1922 kg/m^3 [120 pcf]. Both analyses may assume a friction angle of 34 degrees for backfill within the wall units.

These unit weights and friction angles are based on a wall unit backfill meeting the requirements for select backfill in this specification. Backfill behind the wall units shall be assumed to have a unit weight of 1922 kg/m^3 [120 pcf] and a friction angle of 30 degrees. The friction angle of the foundation soils shall be assumed to be 30 degrees unless otherwise noted on the plans.

- (c) Internal Stability. Internal stability of the wall shall be demonstrated using accepted methods, such as Elias' Method, 1991. Shear keys shall not contribute to pullout resistance. Soil-to-soil frictional component along stem shall not contribute to pullout resistance. The failure plane used to determine pullout resistance shall be found by the Rankine theory only for vertical walls with level backfills. When walls are battered or with backslopes > 0 degrees are considered, the angle of the failure plane shall be per Jumikis Method. For computation of pullout force, the width of the backface of each unit shall be no greater than 1.37 m [4.5 feet]. A unit weight of the soil inside the units shall be assumed no greater than 1922 kg/m^3 120 pcf when computing pullout. Coulomb theory may be used.
- (d) External loads which affect the internal stability such as those applied through piling, bridge footings, traffic, slope surcharge, hydrostatic and seismic loads shall be accounted for in the design.
- (e) The actual applied bearing pressures under the Prefabricated Concrete Modular Gravity block wall shall be clearly indicated on the design drawings.
- (f) Stability During Construction. The factors of safety to be used for stability during construction stages shall be the same factors used for the design of the wall.
- (g) Hydrostatic forces. Unless specified otherwise, when a design high water surface is shown on the plans at the face of the wall, the design stresses calculated from that elevation to the bottom of wall must include a 0.9 meter [3 foot] minimum differential head of saturated backfill. In addition, the buoyant weight of saturated soil shall be used in the calculation of pullout resistance.
- (h) Design Life. Design life shall be in accordance with AASHTO requirements.
- (i) Not more than two vertically consecutive units shall have the same stem length, or the same unit depth. Walls with units with extended height curbs shall be designed for the added earth pressure. A separate computation for pullout of each unit with extended height curbs, or extended height coping, shall be prepared and submitted in the design package described above.

Submittals. The Contractor shall supply wall design computations, wall details, dimensions, quantities, and cross sections necessary to construct the wall. Thirty (30) days prior to beginning construction of the wall, the design computations and wall details shall be submitted to the Resident for review. The fully detailed plans shall be prepared in conformance with Subsection 105.7 of the Standard Specifications and shall include, but not be limited to the following items:

- I. A plan and elevation sheet or sheets for each wall, containing the following: elevations at the top of leveling pads, the distance along the face of the wall to all steps in the leveling pads, the designation as to the type of prefabricated module, the distance along the face of the wall to where changes in length of the units occur, the location of the original and final ground line.
- II. All details, including reinforcing bar bending details, shall be provided. Bar bending details shall be in accordance with Department standards.
- III. All details for foundations and leveling pads, including details for steps in the leveling pads, as well as allowable and actual maximum bearing pressures shall be provided.
- IV. All prefabricated modules shall be detailed. The details shall show all dimensions necessary to construct the element, and all reinforcing steel in the element.
- V. The wall plans shall be prepared and stamped by a Professional Engineer. Four sets of design drawings and detail design computations shall be submitted to the Resident.
- VI. Four weeks prior to the beginning of construction, the contractor shall supply the Resident with two copies of the design-supplier's Installation Manual. In addition, the Contractor shall have two copies of the Installation Manual on the project site.

CONSTRUCTION REQUIREMENTS

Excavation. The excavation and use as fill disposal of all excavated material shall meet the requirements of Section 203 -- Excavation and Embankment, except as modified herein.

Foundation. The area upon which the modular gravity wall structure is to rest, and within the limits shown on the submitted plans, shall be graded for a width equal to, or exceeding, the length of the module. Prior to wall and leveling pad construction, this foundation material shall be compacted to at least 95 percent of maximum laboratory dry density. Frozen soils and soils unsuitable or incapable of sustaining the required compaction, shall be removed and replaced.

A concrete leveling pad shall be constructed as indicated on the plans. The leveling pad shall be cast to the design elevations as shown on the plans, or as required by the wall supplier upon written approval of the Resident. Allowable elevation tolerances are +3 mm [+0.01 foot] and -6 mm [-0.02 foot] from the design elevations. Leveling pads which do not meet this requirements shall be repaired or replaced as directed by the Resident at no additional cost to the Department. Placement of wall units may begin after 24 hours curing time of the concrete leveling pad.

Method and Equipment. Prior to erection of the Prefabricated Concrete Modular Gravity Wall, the Contractor shall furnish the Resident with detailed information concerning the proposed construction method and equipment to be used. The erection procedure shall be in accordance with the manufacturer's instructions. Any pre-cast units that are damaged due to handling will be replaced at the Contractor's expense.

Installation of Wall Units. A field representative from the wall system being used shall be available, as needed, during the erection of the wall. The services of the representative shall be at no additional cost to the Department. Vertical and horizontal joint fillers shall be installed as shown on the plans.

The maximum offset in any unit joint shall be 20 mm [3/4 inch]. The overall vertical tolerance of the wall, plumb from top to bottom, shall not exceed 12 mm per 3 m [1/2 inch per 10 feet] of wall height. The prefabricated wall units shall be installed to a tolerance of plus or minus 20 mm in 3 m [3/4 inch in 10 feet] in vertical alignment and horizontal alignment.

Select Backfill Placement. Backfill placement shall closely follow the erection of each row of prefabricated wall units. The Contractor shall decrease the lift thickness if necessary to obtain the specified density. The maximum lift thickness shall be 200 mm [8 inches] (loose). Gravel borrow backfill shall be compacted in accordance with Subsection 203.12 except that the minimum required compaction shall be 95 percent of maximum density as determined by AASHTO T99 Method C or D. Backfill compaction shall be accomplished without disturbance or displacement of the wall units. Sheepsfoot rollers will not be allowed. Whenever a compaction test fails, no additional backfill shall be placed over the area until the lift is recompacted and a passing test achieved.

The moisture content of the backfill material prior to and during compaction shall be uniform throughout each layer. Backfill material shall have a placement moisture content less than or equal to the optimum moisture content. Backfill material with a placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniform and acceptable throughout the entire lift. The optimum moisture content shall be determined in accordance with AASHTO T99, Method C or D. At the end of the day's operations, the Contractor shall shape the last level of backfill so as to direct runoff of rain water away from the wall face.

Method of Measurement. Prefabricated Concrete Modular Gravity Wall will be measured by the square meter of front surface not to exceed the dimensions shown on the contract plans or authorized by the Resident. Vertical and horizontal dimensions will be from the edges of the facing units. No field measurements for computations will be made unless the Resident specifies, in writing, a change in the limits indicated on the plans.

Basis of Payment. The accepted quantity of Prefabricated Concrete Modular Gravity Retaining Wall will be paid for at the contract unit price per square meter complete in place. Payment shall be full compensation for furnishing all labor, equipment and materials including pre-cast concrete units hardware, joint fillers, woven drainage geotextile, cast-in-place coping or traffic barrier and technical field representative. Cost of cast-in-place concrete for leveling pad will not be paid for separately, but will be considered incidental to the Prefabricated Concrete Modular Gravity Wall.

Excavation, foundation material and backfill material will all be incidental to the Prefabricated Concrete Modular Gravity Wall.

There will be no allowance for excavating and backfilling for the Prefabricated Concrete Modular Gravity Wall beyond the limits shown on the approved submitted plans, except for excavation required to remove unsuitable subsoil in preparation for the foundation, as approved by the Resident. Payment for excavating unsuitable subsoil shall be full compensation for all costs of pumping, drainage, sheeting, bracing and incidentals for proper execution of the work.

Payment will be made under:

Pay Item	Pay Unit
635.14 Prefabricated Concrete Modular Gravity Wall	Square Meter

SPECIAL PROVISION
SECTION 636

Segmental Retaining Wall - Supplier Design

(FOR TOTAL WALL HEIGHTS GREATER THAN 4 FT, 20-CYCLE FREEZE-THAW VARIANCE)

Description. This work shall consist of supplying material for and constructing a Segmental Retaining Wall (SRW) in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.

Alternative wall types may be used if approved by the MaineDOT project geotechnical engineer. Alternative wall types shall meet the requirements of all applicable MaineDOT and AASHTO Standard Specifications and/or Special Provisions.

An SRW system is comprised of the following components:

Foundation - soil mass supporting the SRW.

Leveling Pad - a pad constructed from non-reinforced concrete used to provide a level surface to place segment units.

Segmental Concrete Unit - a pre-cast concrete retaining wall element made from Portland cement, water, and aggregates.

Unit Fill - crushed stone placed within and immediately behind the segmental concrete units for drainage and increased connection strength.

Geosynthetic Reinforcing - a structural element formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement. The geosynthetic reinforcing shall be manufactured by Tensar, Huesker, Strata Systems, Mirafi, or approved equal.

Reinforced Backfill - compacted soil which is placed within the reinforced zone and behind the unit fill as outlined in these specifications and directed by the Resident.

Filter Fabric - drainage geotextile as shown on the plans.

Drainage - shall consist of a perforated or slotted gravity piped system meeting the requirements of 706.06, Corrugated Polyethylene Pipe for Underdrain, installed within the back of the leveling pad with an outlet to existing drainage systems or ditches.

The SRW system used shall be designed by a Professional Engineer registered in the State of Maine. The SRW(s) shall be manufactured and constructed in accordance with these specifications.

The Contractor shall require the design-supplier to provide an on-site, qualified and experienced technical representative to advise the Contractor and the Resident concerning proper installation procedures. The technical representative shall be on-site during initial stages of the installation and thereafter shall remain available for consultation as necessary for the Contractor or as required by the Resident.

Design Requirements. The SRW system shall be designed by a Professional Engineer registered in the State of Maine and shall be subject to review and acceptance by the MaineDOT project geotechnical engineer. The design shall account for all external loads such as sloping backfill, hydrostatic, traffic and seismic. All appurtenances behind, in front of, under, mounted upon or passing through the wall shall be accounted for in the design. The design shall be performed in accordance with the current edition of the AASHTO Standard Specifications for Highway Bridges, Section 5.9, Prefabricated Modular Wall Design, except as required herein.

A. The minimum factors of safety shall be as follows:

1. Overturning	2.0
2. Sliding	1.5
3. Stability of temporary construction slope:	1.2
4. Ultimate bearing capacity:	2.0
5. Reinforcement pullout:	1.5
6. Reinforcement rupture:	1.5
7. Panel connection pullout or rupture:	2.0

B. Differential Settlement. Segmental units must be able to withstand differential settlements within 1% horizontally or vertically.

C. Foundation Soil Parameters. The wall designer shall use the allowable foundation soil bearing capacity as shown on the plans for the specific wall location. The friction angle of the foundation soils shall be assumed to be 30°, unless otherwise noted on the plans.

D. Reinforcement Length. The soil reinforcement length shall be the same length from the bottom to the top of each wall section. The minimum reinforcement length shall be 70% of the wall height, where the wall height is the vertical distance from the top of the leveling pad to the point of intersection where the backfill surface intersects segmental concrete units.

E. For walls greater than 2.4 m (8 ft) high, nominal length reinforcement is required in every course between stability reinforcement to prevent wall face bulging.

F. Leveling Pad Location. The top of the leveling pad shall be designed so that the embedment depth of the SRW is sufficient to maintain stability. The minimum embedment depth of the top of the leveling pad shall be 305 mm (12 inches).

G. Surface Design. The finish grade surface behind the wall shall be designed to prevent surface water from infiltrating behind the wall.

H. Drainage. A system of drainage shall be designed to collect and dispose of water from the base of the unit fill and the backfill. Whenever possible, this drainage system shall outlet directly into the proposed roadway drainage system. The finish grade behind the SRW shall be designed to minimize the infiltration of surface water into the backfill.

Submittals. The Contractor shall supply the following information to the Department for review and approval a minimum of thirty (30) calendar days prior to beginning construction of the wall:

A. The name, address, and telephone number of the individual who will address any questions relating to the submittal package.

Special Provision Section 636

- B. Certification that the retaining wall system component's meet the requirements of this specification. This includes, but is not limited to, segmental concrete units, geosynthetics, alignment pins, etc.
- C. Test results clearly showing the specific segmental unit face stability.
- D. All design calculations, assumptions, and equations clearly explained, shown, and referenced. The name and version number of any computer programs used shall also be included.
- E. Plans (2 sets) showing all details, dimensions, quantities, and cross-sections necessary to construct the wall shall be based on the MaineDOT wall detail sheet in the project plan set. These fully detailed plans shall be prepared in conformance with subsection 105.7 of the Standard Specifications and shall include, but not be limited to, the following items:
 - 1. An elevation view of the wall which shall indicate:
 - a. the elevation at the top of the wall at all horizontal and vertical break points and at least every 20 meters (50 feet) along the wall.
 - b. the elevations of and distance to all steps in the leveling pad.
 - c. the location of the original and final ground line.
 - d. the maximum calculated bearing pressures for each section of the wall where the wall height and loading conditions differ.
 - e. the total number of segmental units per row and the equivalent area given in square meters.
 - f. a complete summary of all quantities for the segmental units, select fill and any incidental items required.
 - 2. A plan view of the wall which shall indicate:
 - a. the offset from the construction centerline to the face of the wall at all changes in horizontal alignment.
 - b. the centerline of any drainage structures.
 - c. all horizontal and vertical curve data affecting wall construction.
 - d. limits of construction including temporary slopes.
 - 3. Any general notes pertaining to design criteria and construction of the wall.
 - 4. All details and dimensions for the geosynthetic reinforcement, leveling pads, drainage system, alignment and connection details.
 - 5. Cross-sections showing the limits of excavation and limits of the unit fill and reinforced backfill.
 - 6. Standard details for the segmental units, caps, and any incidental items necessary.
 - 7. The State of Maine professional engineer's stamp and signature.

MATERIALS

Segmental Concrete Units. This specification covers segmental concrete units for use in the construction of mortarless retaining walls (SRW's). Each manufacturing facility shall provide the Resident with a copy of their quality control plan and procedures, including testing rates and material sources. Each manufacturing facility shall also supply test reports and documentation to verify compliance with this specification.

All Segmental Concrete Units used for construction shall conform to the following requirements:

- A. The minimum 28 day compressive strength requirement shall be 34.5 MPa (5000 psi) for any individual unit and 36.5 MPa (5300 psi) for the average of 3 units.
- B. Absorption - 5 percent maximum
- C. Unit Weight - 43 kg (95 pounds) per unit, minimum
- D. Unit Depth - 455 mm (18 inches), minimum
- E. Unit Width - 455 mm (18 inches), minimum at the face
- F. Unit Height - 150 mm (6 inches), minimum at the face
- G. Wall Thickness - for hollow units, the minimum wall thickness shall be 32 mm (1.25 inches)
- H. Tolerances - formed dimensions shall not vary more than 2 mm (1/16 inch) from the manufacturers published dimensions
- I. Face Texture - split or smooth face
- J. Face Geometry – straight or beveled.
- K. Batter - between 0° to 11° from vertical.
- L. Alignment and grid positioning mechanism - pins required to align the SRW and provide a shear connection shall consist of a non-degrading polymer or galvanized steel and made for the express use with the SRW units supplied. All shear connections shall be capable of holding the geosynthetic in the proper design position during grid pre-tensioning and backfilling. Other alignment methods consisting of concrete shear keys, concrete shear lips, or other shear connectors as approved, shall be followed in strict conformance with the manufacturer's recommendations.
- M. Color - pigment shall be added during the casting process of the segmental unit to achieve a consistent shade of gray or other color as determined by the Resident or as specified on the plans.
- N. Imperfections and Rejection - All units shall be sound and free of cracks or other defects that would interfere with the proper placing of each unit or significantly impair the strength or performance of the construction. Minor cracks (e.g. no greater than 0.5 mm (0.02 inches) in width and no longer than 25% of the unit height) incidental to the method of manufacture or minor chipping resultant from shipment and delivery, are not grounds for rejection.

Exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 3 meters (10 feet) under diffused lighting.

Rejection - blocks shall be rejected because of failure to meet any of the requirements of this Section. In addition, any or all of the following defects shall be sufficient cause for rejection.

- Defects that indicate imperfect molding.
- Defects indicating honeycomb or open texture concrete.
- Cracked or severely chipped blocks.
- Color variation on front face of block due to excess form oil or other reasons.

- O. Cap Units - Cap units must meet the segmental concrete unit manufacturer's size requirements (typically a minimum of one-half the segmental concrete unit depth dimension). Cap units shall be cast to or attached to the SRW units in strict accordance with the manufacturer's requirements and the adhesive manufacturer's recommended procedures.
- P. Freeze-Thaw Durability - the freeze-thaw durability of the segmental concrete units tested in accordance with ASTM C 1262 in a 3% saline solution shall be the minimum of the following:
1. The weight loss of each of five test specimens at the conclusion of 20 cycles shall not exceed 1% of its initial weight; or
 2. The weight loss of 4 out of 5 test specimens at the conclusion of 25 cycles shall not exceed 1.5% of its initial weight, with the maximum allowable weight loss for the 5th specimen not to exceed 10%.
- Q. Cap units shall meet the requirements of (A), (B), and (P) and have a top surface sloped at a minimum of 1 mm fall per 10 mm run (1 inch fall per 10 inches run) front to back or be crowned at the center.
- R. ASTM C 1262 test results shall be recorded and reported in 10 cycle intervals.
- S. Other Constituents - air entraining agents, coloring pigments, integral water repellents, finely ground silica, and other constituents shall be previously established as suitable for use in segmental concrete retaining wall units and shall conform to applicable AASHTO standards or, shall be shown by test or experience to be not detrimental to the appearance or durability of the segmental concrete units or any material customarily used in retaining wall construction.
- T. Surface Sealant - The surface sealant shall be a water base or solvent based silane or siloxane product.

The surface sealant shall be provided by one of the following approved segmental unit manufacturers. Alternative sealants may be used if approved by the Resident.

Approved Sealants

Sure Klean Weather Seal SL100
ProSoCo, Inc.
3741 Greenway Circle
Kansas City, KA 66117
800-255-4255

Hydrozo Enviroseal 40
ChemRex
889 Valley Park Drive
Shakopee, MN 55379
800-243-6739

Chem-Trete BSM 40 VOC
Sivento, Inc.
2 Turner Place
Piscataway, NJ 08855
877-748-3686

Segmental Concrete Unit Sampling and Testing. Shall conform to ASTM C 140, except that:

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Section 6.2.4 shall be deleted and replaced with: "The specimens shall be coupons cut from a face shell of each unit and sawn to remove any face shell projections. The coupon size shall have a height to thickness ratio of 2 to 1 before capping and a length to thickness ratio of 4 to 1. The coupon shall be cut from the unit such that the coupon height dimension is in the same direction as the unit height dimension. Compressive testing of full size units will not be permitted. The compressive strength of the coupon shall be assumed to represent the net area compressive strength of the whole unit."

Cap units and wall units shall be sampled and tested as separate block types.

Each manufacturing facility is required to sample and test each block type at the rate of one sample per 2000 units of continuous production or fraction thereof (if production is interrupted) as part of their overall quality control testing.

Example: If 5,000 wall units are produced in a continuous production run, 3 sets of samples would be required. If 3,000 units are produced in each of two separate production runs (6,000 total), then 2 sets of samples would be required from each separate production run (4 sets of samples total).

Each manufacturer test set shall include 8 randomly selected wall and cap units for the following testing:

- A. Compressive strength (average of 3 units)
- B. 24 hour absorption (this is strictly a quality control test)
- C. Freeze-thaw durability (average of 5 units)

All block manufacturers shall submit test results from the tests described in the "Segmental Concrete Units" and "Sampling and Testing" sections above to the Resident. All segmental concrete units submitted for use on MDOT or Federal-Aid projects shall be accompanied by a certificate of compliance attached to each pallet of units. The certificate of compliance shall include the name and address of the manufacturing facility and date of manufacture in addition to all other required information.

Segmental Concrete Step Units. Segmental Concrete Step Units shall be supplied by the same supplier as the Segmental Concrete Units and shall conform to Sections A, B, G, H, L, M, N, O, P, and Q for Segmental Concrete Units, as discussed above.

Geosynthetic Reinforcing. The structural geosynthetic reinforcing shall meet the following requirements:

- A. The geosynthetics shall be a regular polymeric grid structure of select high density polyethylene (HDPE), polypropylene (PP), or polyester (PET) resin manufactured by Tensar, Huesker, Strata Systems, Mirafli, or approved equal.
- B. The geosynthetic shall conform to the following criteria:
 - B1. PP and HDPE: Minimum retained strength of 70 % after 150 hours, per ASTM D-4355.
 - B2. HDPE: Grade = E-4, E-5, E-8, E-9, E-10, E-11, J-3, J-4, J-5, P-24, or P-34, per ASTM D-1248.
 - B3. PET: Molecular weight (M_n) > 25,000 g/mole, Inherent Viscosity Method per ASTM D-4603, with Correlation or Determined Directly Using Gel Permeation Chromatography.
 - B4. PET: Carboxyl end group (CEG) < 30 meg/kg, GRI:GG7
 - B5. All polymers: Minimum Weight per Unit Area of 270 g/m², per ASTM D-5261
 - B6. A default total reduction factor for creep, durability, and installation damage of 7 may be used in design, provided the criteria of B2 through B5 and B1 is adjusted to 70% after 500 hours is satisfied.
- C. The Long Term Tensile Strength (T_{al}) of the geosynthetic shall be determined by reducing the Ultimate Strength (T_u), as determined using ASTM 4595 or GRI:GG1, by the product of the

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reduction factors for durability, installation damage, and creep, denoted RF_D , RF_{ID} , and, RF_{CR} , respectively. The required tests used to determine the reduction factors, minimum value to be used in design if test value is less than minimum, and maximum value to be used in design in the absence of test data are summarized below.

Reduction Factor	Test	Minimum/Maximum
Durability (RF_D)	HDPE and PP: ASTM D4355 PET: GRI:GG7	1.1/2.0
Installation Damage(RF_{ID})	Site installation damaged tests, similar to ASTM D-5818	1.1/3.0
Creep(RF_{CR})	ASTM D-5262	HDPE = 2.6/5.0 PP = 4.0/5.0 PET = 1.6/2.5

- D. The pullout resistance factors, F^* and α , used in pullout design, shall be determined for the proposed reinforcement and wall system, with soil similar to the specified backfill material of this Section. The pullout resistance factors shall be determined in accordance with Appendix A of FHWA SA-96-071 "Mechanical Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines." In the absence of test data, empirical relationships may be used to determine the pullout resistance factors, any empirical relationships used in design shall be referenced in the design calculations.
- E. Long-term connection strength between the geosynthetic reinforcement and the modular blocks shall be checked, per AASHTO-Standard Specifications for Highway Bridges, Section 5.8.
- F. The Contractor shall submit a Manufacturer's Certificate, which shall state that the furnished geosynthetic(s) meets the requirements of this Section, as evaluated by the manufacturer's quality control program. Included with the certificates, shall be the design parameters and required properties referenced in this Section. The certificates shall be attested to by a person having legal authority to bond the manufacturer. In case of dispute over validity of values, the Resident can require the Contractor to supply test data from a Department approved laboratory to support the certified values submitted.

Leveling Pad. The leveling pad material shall consist of a non-reinforced concrete as shown on the plans. Non-reinforced concrete must have a minimum 28-day compressive strength of 20685 kPa (3000 psi). At their own risk, the contractor may place segmental units on the concrete leveling pad after the concrete has cured for a minimum of 12 hours.

Unit Fill. Unit fill shall consist of Underdrain Backfill Material Type C, 703.22. Unit fill shall be used in all voids in the segmental units and for a minimum distance of 0.3 meters (1 foot) from the back of the segmental units.

Reinforced Backfill. Backfill shall Consist of Granular Borrow, 703.19 Material for Embankment Construction, with the following restrictions:

- A. The maximum size shall not exceed 20 mm (3/4 in.). The maximum aggregate size may be increased to a maximum of 76 mm (3 in.), provided installation damage tests are conducted with similar material, in accordance with ASTM D-5818.
- B. Plasticity Index (PI) < 6, per AASHTO T-90.
- C. Coefficient of Uniformity (C_u) > 4.
- D. Internal friction angle (Φ) = 34°, per AASHTO T-236. The internal friction angle shall be determined on the portion finer than the No. 10 sieve (by weight), using material compacted to 95% of the maximum dry density, per AASHTO T-99, Methods C or D (with oversized correction as outlined in Note 7 at optimum moisture content)

- E. pH: between 4.5 and 9 (AASHTO T-289-91)
- F. Organic content < 1% (AASHTO T-267-86)

The Contractor is responsible for removing any stones that exceed the maximum size. High plastic clays or organic soils encountered during SRW installation shall be removed and replaced, as directed by the Resident.

Foundation. The foundation shall have sufficient strength to maintain global stability of the SRW.

- A. If approved by the project geotechnical engineer, the in situ soils may be used.
- B. If the SRW is to be founded on fill, it shall consist of 703.20 Gravel Borrow. The foundation shall be compacted to 95% of the maximum density as determined by AASHTO T-180, Method C or D. The moisture content of the foundation material prior to and during compaction shall be uniformly distributed throughout each layer and shall be within 2 percentage points dry of optimum.

Filter Fabric. - shall be a geotextile meeting the requirements of the MaineDOT Standard Specifications Subsection 722.02, Drainage Geotextile.

Acceptance of Material. The Contractor shall furnish to the Resident a Certificate Of Compliance, certifying that the materials to be used in construction of the SRW, comply with the material requirements of this Section. A copy of all test results performed by the Contractor necessary to assure contract compliance shall be furnished to the Resident. Acceptance will be based on the certificate of compliance, accompany test reports, and visual inspection by the Resident, or tests performed independently by the Resident.

CONSTRUCTION

Construction. Construction practices for the SRW shall be in general conformance with the AASHTO Standard Specifications for Highway Bridges, except as amended herein. All applicable manufacturer's recommendations regarding stability of the SRW during construction shall be followed.

Delivery, Storage and Handling.

- A. Segmental concrete units shall be delivered on sealed pallets. Contractor shall check all materials (segmental concrete units, geosynthetics, etc.) upon delivery to assure that the proper materials have been received. A product certification shall be provided with each shipment.
- B. Geosynthetic material shall be stored above -20° F
- C. Contractor shall prevent excessive mud, wet cement, epoxy and like substances which may affix themselves to the material from coming in contact with the segmental concrete unit and geosynthetic material.
- D. Geosynthetic material may be laid flat and stored outside for 30 days. For extended storage, material shall be stored in or beneath a trailer or covered with a colored tarpaulin to prevent long-term exposure. PP and HDPE geosynthetics shall be covered at all times to protect them from UV light and shall only be uncovered just prior to installation. PP and HDPE shall be left unprotected from UV light for a maximum of 24 hours.

Excavation.

- A. The Contractor shall excavate to the lines and grades shown on the plans. The Resident will inspect the excavation prior to placement of foundation material.
- B. Excavation shall be deep enough to provide a minimum embedment depth of 305 mm (12 inches) to the bottom of the SRW (top of the leveling pad) and a 155-mm (6 inch) thick leveling pad, or as otherwise shown on the plans.
- C. The Contractor shall be careful not to disturb the base beyond the leveling pad lines. The Resident will inspect the excavation prior to placement of leveling pad material.

Foundation.

- A. Foundation soil shall be brought to grade as required for footing or base dimensions shown on plans, or as directed by the Resident.
- B. The foundation soil shall be examined by the project geotechnical engineer to ensure that the actual foundation strength meets or exceeds requirements. Soil not meeting the required strength shall be removed and replaced with acceptable material. Prior to wall erection, the foundation shall be compacted with a smooth drum vibratory roller, or a vibratory plate compactor if access is limited, to provide a strong uniform foundation material. Any foundation soils found to be unsuitable, as determined by the Engineer, shall be removed and replaced with 703.20 Gravel Borrow. The foundation shall be compacted to 95% of the maximum density as determined by AASHTO T-180, Method C or D.

Leveling Pad.

- A. Leveling pad shall be placed to the lines and grades as shown on the plans, to a minimum thickness of 155 mm (6 inches) and minimum width of 815 mm (32 inches). Concrete leveling pads shall be a minimum of 100 mm (4 inches) wider than the segmental concrete unit depth dimension to provide 50 mm (2 inches) centering clearance on the front and back of the segmental unit. Concrete leveling pads may also require a 703.22, Type C crushed stone base as shown on the plans or directed by the Resident.
- B. Leveling pad material shall be compacted so as to provide a level, hard surface on which to place the first course of segmental concrete units. Compaction shall consist of a minimum of three passes with a large vibratory plate compactor. When concrete is used for the leveling pad, the concrete shall be cured for a minimum of 12 hours before placement of segmental units.
- C. Leveling pad shall be prepared to insure full contact with the base surface of the SRW units.
- D. Steps in the leveling pad shall not vary from the height of the segmental concrete unit by more than 2 mm (1/16 inch).
- E. Contractor shall install a perforated or slotted gravity piped system meeting the requirements of 706.06 Corrugated Polyethylene Pipe for Underdrain within the back of the leveling pad with an outlet to existing drainage systems or ditches.

Segmental Unit Installation.

- A. The first course of segmental concrete units shall be placed on the leveling pad, and alignment and level checked. All units shall sit firmly and completely on the pad. Horizontal alignment of

the concrete units shall be controlled from formed edges only. The top of all units on the leveling pad shall be at the same elevation.

- B. Each course of segmental concrete units shall be placed side by side the full length of wall alignment.
- C. Fill all voids in and between segmental units with unit fill.
- D. Remove all excess material from the top of units before installing next course.
- E. Maximum stacked vertical height of wall units, prior to unit fill and backfill placement and compaction, shall not exceed one course.
- F. All units, whole or split, shall be erected with running bond approximately centered on units above and below.
- G. Cap units shall be cast to or attached to the top course of the SRW units in strict accordance with the manufacturer's requirements and the adhesive manufacturer's recommended procedures.
- H. All exposed edges of the finished wall shall have either a split face or straight and smooth concrete appearance.
- I. The maximum horizontal gap between erected units shall be 3 mm (1/8 inch).
- J. Differential settlement and alignment tolerances shall not exceed 1% horizontally or vertically.

Structural Geosynthetic Installation.

- A. Geosynthetic shall be oriented with the highest strength axis perpendicular to the wall alignment.
- B. Geosynthetic reinforcement shall be placed at the elevations and to the extent required on the plans.
- C. The geosynthetic shall be laid horizontally on compacted backfill. The next course of segmental concrete units shall be placed over the geosynthetic. The geosynthetic shall be pulled taut, and anchored prior to backfill placement on the geosynthetic.
- D. Geosynthetic reinforcements shall be continuous throughout their embedment lengths. Spliced connections between shorter pieces of geosynthetic is not allowed.

Reinforced Backfill Placement.

- A. Backfill shall be placed, spread, and compacted from the back of the unit fill toward the limits of the excavation to minimize slack. At no time shall backfill be dumped directly onto the geosynthetic. Backfill shall either be dumped adjacent to, or on top of a previously compacted lift of backfill and pushed onto the geosynthetic.
- B. Backfill placement shall closely follow erection of each course of blocks. Backfill shall be placed in such a manner as to avoid any damage or disturbance of the wall materials or misalignment of the segmental concrete units.
- C. Reinforced backfill shall be placed and compacted in lifts not to exceed 200 mm (8 inches) where lightweight hand-operated compaction equipment is used, or 305 mm (12 inches) where

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heavy compaction equipment is used. Heavy compaction equipment shall not be allowed within 1.5 meters (5 feet) from the back of the segmental concrete units.

- D. Reinforced backfill placed behind the segmental concrete units shall be compacted to 95% of the maximum density as determined by AASHTO T-99, Method C or D.
- E. A minimum compacted lift thickness of 203 mm (8 inches) is required prior to operating any tracked equipment over the geosynthetic. Tracked vehicle turning shall be kept to a minimum to prevent tracks from displacing the fill and damaging the geosynthetic. At no time shall track mounted equipment be allowed directly onto geosynthetic.
- F. A minimum compacted lift thickness of 305 mm (12 inches) is required prior to operating any wheel mounted equipment over the geosynthetic. Wheeled vehicle turning shall be kept to a minimum to prevent displacement of the fill and damaging the geosynthetic. When absolutely necessary, as approved by the Resident, rubber tired equipment may pass over the geosynthetic reinforcement at slow speeds less than 16 km/hr(10 MPH). Sudden braking and sharp turning shall be avoided.
- G. At the end of each day's operation, the Contractor shall slope the reinforced backfill away from the wall units to direct runoff away from the wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

Surface Sealant. Segmental block retaining wall surface sealing shall consist of preparation, furnishing, and applying the surface sealer to the exposed front face and top of the wall.

The contractor must comply with the manufacturer's written instructions for preparing, handling and applying the surface sealant. The surface area to be sealed must be free of all dust, debris, and frost. Surface sealers must be applied at the heaviest application rate specified by the manufacturer.

All materials and work performed as specified above will be incidental to the construction of the wall.

Measurement. Segmental Retaining Wall will be measured by the square meter (square foot) of front surface not to exceed the dimensions shown on the plans or as authorized by the Resident. Vertical dimension limits will be from the top of the leveling pad to the top of the wall. Horizontal dimension limits will be from the edges of the facing units at each end of the wall. Segmental units used behind the face units for the construction of steps will not be paid for separately but will be considered incidental to the Segmental Retaining Wall item.

Basis of Payment. The accepted quantity of Segmental Retaining Wall will be paid for at the contract unit price per square meter (square foot), complete, cleaned of debris and accepted in place. The unit price shall be full compensation for excavation, backfill, and grading beyond the face of the wall and furnishing all materials, labor, equipment, and other incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
636.64 Segmental Retaining Wall Supplier Design	Square meter (Square Foot)

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC

Approaches Approach signing shall include the following signs as a minimum. Field conditions may warrant the use of additional signs as determined by the Resident.

Road Work Next x Miles
Road Work 500 Feet
End Road Work

Work Area At each work site, signs and channelizing devices shall be used as directed by the Resident. Signs include:

Road Work xxxx¹
One Lane Road Ahead
Flagger Sign

Other typical signs include:

Be Prepared to Stop
Low Shoulder
Bump
Pavement Ends

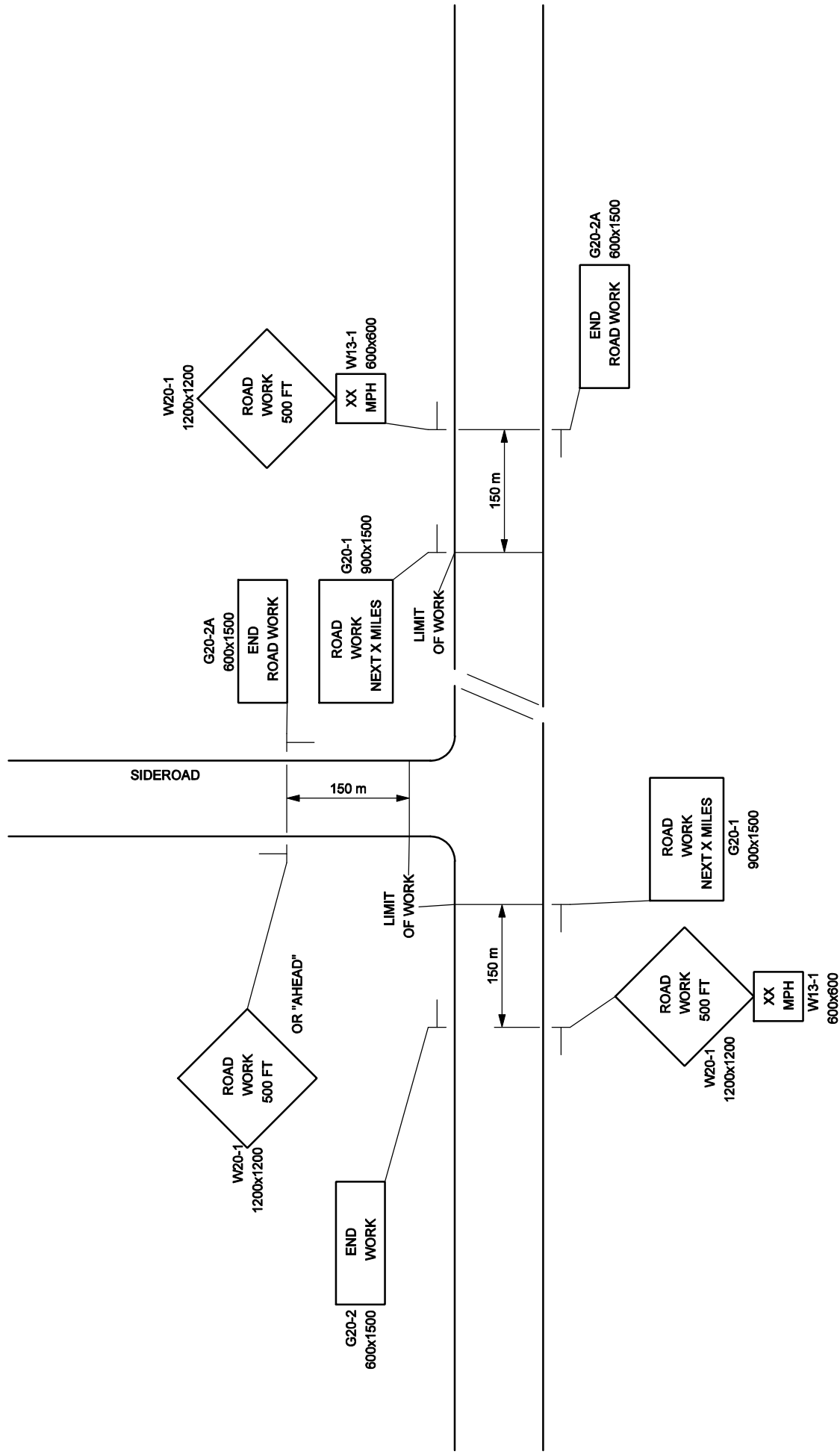
The above lists of Approach signs and Work Area signs are representative of the contract requirements. Other sign legends may be required.

The Contractor shall conduct their operations in such a manner that the roadway will not be restricted to one lane for more than 800 m [2,500 ft] at each work area. Where more than one work area restricts traffic to one lane operation, these work areas shall be separated by at least 1.6 km [1 mile] of two way operation.

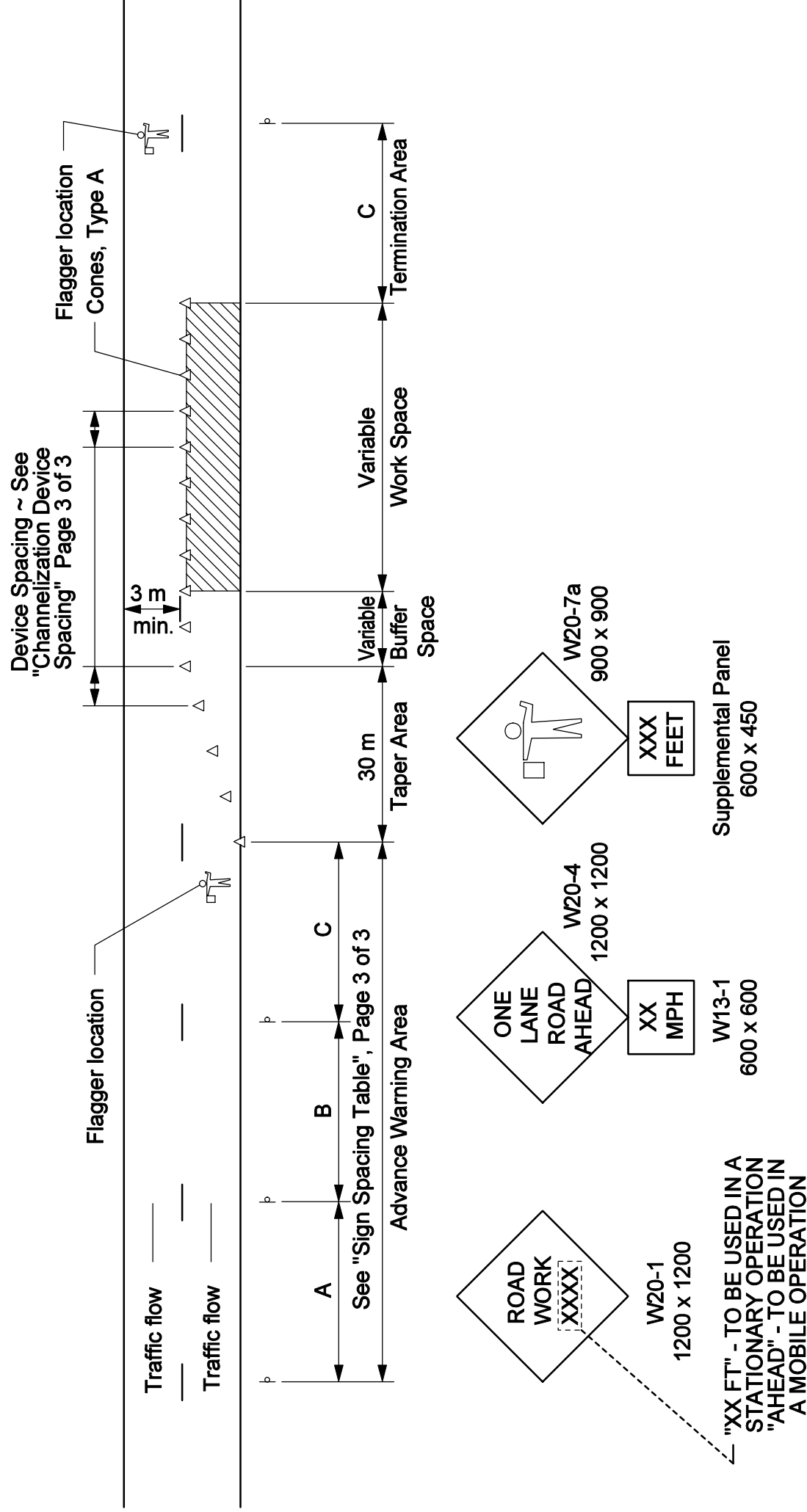
Temporary Centerline A temporary centerline shall be placed each day on all new pavement to be used by traffic. The temporary centerline, when specified of reflectorized traffic paint, shall conform to the standard marking patterns used for permanent markings.

Failure to apply a temporary centerline daily will result in suspension of paving until temporary markers are applied to all previously placed pavement.

¹ "Road Work Ahead" to be used in mobile operations and "Road Work xx ft" to be used in stationary operations as directed by the Resident.



TYPICAL -- PROJECT APPROACH SIGNING -- TWO WAY TRAFFIC



TYPICAL APPLICATION: TWO - WAY, TWO LANE ROADWAY,
CLOSING ONE LANE USING FLAGGERS

* Formulas for L are as follows:

For speed limits of 40 mph (60 km/h) or less:

$$L = \frac{WS^2}{60} \quad (L = \frac{WS^2}{155})$$

For speed limits of 45 mph (70 km/h) or greater:

$$L = WS \quad (L = \frac{WS}{1.6})$$

* Formulas for L are as follows:

A minimum of 5 channelization devices shall be used in the taper.

TYPE OF TAPER	TAPER LENGTH (L)*
Merging Taper	at least L
Shifting Taper	at least 0.5L
Shoulder Taper	at least 0.33L
One-Lane, Two-Way Traffic Taper	100 ft (30 m) maximum
Downstream Taper	100 ft (30 m) per lane

CHANNELIZATION DEVICE SPACING

The spacing of channelization devices shall not exceed a distance equal to 1.0 times the speed limit in mph when used for taper channelization, and a distance in feet of 2.0 times the speed limit in mph when used for tangent channelization.

GENERAL NOTES;

1. Final placement of signs and devices may be changed to fit field conditions as approved by the Resident.

SIGN SPACING TABLE			
Road Type	Distance Between Signs**		
	A	B	C
Urban 30 mph (50 km/h) or less	100 (30)	100 (30)	100 (30)
Urban 35 mph (55 km/h) and greater	350 (100)	350 (100)	350 (100)
Rural	500 (150)	500 (150)	500 (150)
Expressway / Urban Parkway	2,640 (800)	1,500 (450)	1000 (300)

**Distances are shown in feet (meters).

SUGGESTED BUFFER ZONE LENGTHS

Speed (mph)	Length (feet)	Speed (mph)	Length (feet)
20	115	40	325
25	155	45	360
30	200	50	425
35	250	55	495

SPECIAL PROVISION
SECTION 656
Temporary Soil Erosion and Water Pollution Control

The following is added to Section 656 regarding Project Specific Information and Requirements. All references to the Maine Department of Transportation Best Management Practices for Erosion and Sediment Control (a.k.a. Best Management Practices manual or BMP Manual) are a reference to the latest revision of said manual. The "Table of Contents" of the latest version is dated "1/19/00" (available at <http://www.state.me.us/mdot/mainhtml/bmp/bmpjan2000.pdf>.)

Procedures specified shall be according to the BMP Manual unless stated otherwise.

Project Specific Information and Requirements

The following information and requirements apply specifically to this Project. The temporary soil erosion and water pollution control measures associated with this work shall be addressed in the SEWPCP.

1. This project is located in the Kennebec River watershed along a section of the river that is designated Class B. This project will be considered **SENSITIVE** in accordance with the BMP Manual, due to the proximity of this project to the resource. The Contractor's SEWPCP shall comply with Section II.B., Guidelines for Sensitive Waterbodies in the BMP Manual.
2. A preconstruction field review is will be required for this project. The preconstruction field review shall take place before commencing any work that involves soil disturbance or potential impacts on water quality. The date and time shall be set by the Contractor in consultation with the Construction Manager and the ENV Water Resources Unit representative.
3. Newly disturbed earth shall be mulched by the end of each workday. Mulch shall be maintained on a daily basis.
4. Dust control items other than those under *Standard Specification, Section 637 – Dust Control*, if applicable, shall be included in the plan.
5. Demolition debris (including debris from wearing surface removal, saw cut slurry, dust, etc.) shall be contained and shall not be allowed to discharge to any resource. All demolition debris shall be disposed of in accordance with *Standard Specifications, Section 202.03 Removing Existing Superstructure, Structural Concrete, Railings, Curbs, Sidewalks and Bridges*. Containment and disposal of demolition debris shall be addressed in the Contractor's SEWPCP.
6. Permanent slope stabilization measures shall be applied within one week of the last soil disturbance.
7. Permanent seeding shall be done in accordance with *Standard Specification, Section 618 - Seeding* unless the Contract states otherwise.
8. After November 1 the Contractor shall use winter stabilization methods, such as Erosion Control Mix as specified in *Standard Specification, Section 619 - Mulch*. If required, spring

SPECIAL PROVISION
SECTION 656

Temporary Soil Erosion and Water Pollution Control

procedures for permanent stabilization shall also be described in the plan. Use of this product for over-winter temporary erosion control will be incidental to the contract and be paid for as part of Pay Item 656.75.

9. All disturbed ditches shall be stabilized by the end of each workday. Stabilization shall be maintained on a daily basis. Erosion control blanket shall be installed in the bottoms of all ditches except where a stone lining is planned. Seed shall be applied prior to the placement of the blanket.

NOTES:

1. Any and all references to “bark mulch” or “composted bark mix” shall be a reference to “Erosion Control Mix” in accordance with *Standard Specification, Section 619 - Mulch*.

GARDINER WATER DISTRICT
CONTRACT REQUIREMENTS AND SPECIFICATIONS
FOR
WATER MAIN REPLACEMENT
ROUTE 201 - ROAD RECONSTRUCTION
HALLOWELL, FARMINGDALE & GARDINER, ME

NOVEMBER 2004



Prepared By:

Wright-Pierce
99 Main Street
Topsham, Maine 04086

Phone: (207) 725-8721

**DWSRF Supplemental General Conditions for Projects Done
in Conjunction with MDOT
2/6/04**

1. **Disclaimer**

The Water Utility portion of this contract is expected to be funded in part by a State Revolving Loan.

The Department of Human Services is not party to any portion of this overall contract.

2. **Inspection**

The Department of Human Services shall have access to the project site for inspection of the Water Utility work.

3. **Access to Records**

DHS, MMBB, and US Comptroller General, or any authorized representatives shall have the right to access records from the Department of Transportation pertinent to this project.

DIVISION 1GENERAL REQUIREMENTSScope of Work

The scope of this Division covers the general administrative requirements and the general work related provisions of the Construction Contract.

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END OF SECTION

SECTION 01010SUMMARY OF WORKPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included: Installation of water mains and appurtenances, (1) Pressure Reducing Valve Station, Cleaning and testing of water mains and gravity sewer.

1. Construction of:

- a. Approximately 1,500 linear meters of 12-inch ductile iron water mains and appurtenances. The work is along Route 201 and will take place during the Maine Department of Transportation's (MDOT) full depth reconstruction of Route 201 between STA 11+285 and 12+885 as shown on the plans.
- b. (1) PRV station connecting to the Hallowell Water District's distribution system at STA 12+810.
- c. Gravity sewer work at the Maple Street intersection; install (2) manholes, 13 meters of 150 mm PVC, modify rim elevations, service connections.

B. Removals, Relocations

1. The Contractor shall be responsible for removing and relaying existing utilities that cause interference with the construction of the proposed water main location. All other utilities not shown on the drawings shall be the responsibility of the contractor to become familiar with the site conditions, and this work and coordination shall be reflected in bid price.

1.2 PROGRESS OF WORK

- A. The Contractor shall promptly start pipe installation and continue actual construction work under this contract with the necessary crews and equipment to properly execute and complete this contract in the specified time. No cessation of Contractor's operations will be allowed without the approval of the Owner. The rate of progress shall be satisfactory to the Owner and the Engineer. The Contractor shall furnish to the Engineer a progress and a cash flow schedule for the work at the preconstruction conference.
- B. The Contractor shall become familiar with the Town of Boothbay and Maine DOT standards for road way work.

1.3 DETOURS AND ROAD ACCESSIBILITY

- A. The Contractor shall contact the responsible heads of the Fire, Police, Highway and other appropriate governing bodies of the municipality in order to obtain necessary permits and determine the requirements of said departments with respect to traffic control, alternate vehicular access routes, etc. Wherever detours are permitted the size, construction and location of signs shall conform with local and state requirements and/or standards. Detour routes shall be adequately posted to assist the motorist to return to his route of travel. Where the roadway under construction

is the only means of vehicular access to a particular area, the Contractor shall provide continual access to the area for residents and emergency vehicles.

- B. The Contractor is responsible for providing flaggers/police and maintaining two-way traffic during construction.

1.4 CHANGE IN AMOUNT OF WORK

- A. The Owner reserves the right to increase or decrease the amount of any item of the work listed as may be found desirable or necessary during the carrying out of this contract and the unit prices quoted in the Proposal shall apply without change to such variation in the quantity of each of the Items. The Owner may elect to reduce the quantity or delete ductile iron piping, fittings and other related work from the contract.

1.5 SEQUENCE OF CONSTRUCTION

- A. For the protection of life and property all backfill operations shall follow closely behind pipe laying. The Contractor shall insure that no excavation be left open, unguarded, or water filled during any period of time when work is not actually in progress. It is the purpose and intent that all excavations and backfill, including consolidation operations, the installation of service connections and temporary surfacing and pavements within an area be accomplished expeditiously before proceeding to other work areas. Construction scheduling and methods will be discussed at the pre-construction conference.
- B. The Owner reserves the right to schedule the Contractor to construct at any locations within the project area. At the same time the Owner may order the suspension of construction at any location. Construction in seasonally heavily traveled roads shall be avoided during the peak traffic periods. The Contractor is advised that various permits are necessary for the progress of the work.
- C. The Contractor shall pay special attention to the schedule and number of construction days as specified. If the Contractor exceeds the number of construction days, he shall pay liquidated damages and incur all additional expenses to include additional costs for uniformed police officer.
- D. The Contractor is permitted to have multiple construction crews if required to meet the construction time frame.

1.6 VISIT TO THE SITE

- A. Before submitting a bid, the Contractor shall visit the various sites, examine their conditions and thoroughly acquaint himself with the conditions for performing the work. He shall also study the drawings and compare the same with the information gathered during his examination of the sites, as no extra compensation will be authorized for extra work caused by his unfamiliarity with the sites and/or drawings or the conditions peculiar to this job.

1.7 DISPOSAL OF EXCESS MATERIAL

- A. All surplus material, except for removed watermains, removed from the excavations shall remain the property of the Owner and shall be deposited by the Contractor as directed by the Owner within the limits of the municipality wherein

the work is being performed. The Contractor is responsible for the disposal fees incurred at the Regional Disposal Facility for the deposition of all waste, unsuitable and hazardous materials from the work performed.

- B. The Contractor is responsible for the disposal of all removed watermain in a suitable manner.
- C. All existing hydrants to be replaced shall be removed and disposed of by the Contractor.

1.8 TECHNICAL SPECIFICATIONS

- A. All technical specifications such as ASTM, AWWA, AASHTO, etc, referred to in these specifications refer to the latest revision of such technical specifications.

1.9 SPECIAL CONDITIONS

- A. The Contractor is advised that protection of the existing utilities in the vicinity of the project, and the assurance of uninterrupted service during the contract period is of the essence.
- B. In the event that blasting or other operations undertaken by the Contractor under this contract result in damages to, all necessary repairs to water piping, valves, hydrants, fittings, cables, etc., shall be done by the Contractor. The Contractor shall provide, at no extra cost to the Owner, all necessary materials, equipment and labor necessary to satisfactorily excavate backfill, repair, etc., in conjunction with such repair work.
- C. The location and size for some of the existing sewers, drains, culverts, water mains, gas mains, cables, service pipes, etc., shown on the plans, were obtained from the results of surveys and existing records and are shown as approximate only, to guide the Contractor in the preparation of his bid. The location and depth of existing utilities will be determined by the various utility companies by marking them out upon the ground and by experimental excavations by the Contractor prior to and as the work progresses. The plans do not show the exact location and depth of all utilities, nor do they show all utilities that may be encountered.
- D. Prior to commencing excavation work, the Contractor shall notify Dig-Safe (1-800-322-4844) to have all existing public and private utility lines and underground structures marked out.

1.10 PERMITS, FEES AND BONDS

- A. The Contractor shall obtain and comply with all required permits, pay all fees and provide all bonds necessary to complete the work as specified.

1.11 EXISTING UTILITIES AND STRUCTURES

- A. The location and size of some existing underground facilities such as sewers, drains, culverts, water mains, gas mains, cables, service pipes, etc., are shown on the plans, based on results of surveys and existing records, and are shown as approximate only. The plans do not show the exact location and depth of all utilities, nor do they show all utilities that may be encountered.
- B. The Contractor shall assume that there are existing underground utility connections to each and every building or structure along the line of work, whether they appear

on the drawings or not. The Contractor shall notify the proper utility companies and obtain and preserve the locations as marked for all existing gas, electric and other utilities that may be encountered along the line of work, until such time as such markings are no longer required.

- C. Experimental trench excavations are to be made prior to commencing pipe laying operations. The experimental trench locations shall be where requested by the Contractor and/or as directed by the Engineer, and shall be paid for under the applicable bid item.
- D. The Contractor shall dig by hand in advance of the trenching machinery to determine the exact location and depth of each utility to be encountered. Excavating machinery shall be stopped at least two feet away from each side of the utility to be crossed and the Contractor shall tunnel by hand under these utilities after he has ascertained their exact location and depth.

1.12 STATE HIGHWAY BOUNDS AND PROPERTY MARKERS

- A. Prior to construction, the Contractor shall engage a Registered Land Surveyor to provide permanent reference points for all bounds and private property markers along the line of the work, which in the opinion of the Owner, may be disturbed during construction. The Contractor shall submit copies of all ties to the bounds and property markers to the Engineer prior to excavation at the site. Any bounds or markers disturbed by the Contractor shall be replaced utilizing the services of a Registered Land Surveyor. The cost of replacing markers negligently disturbed shall be at the Contractor's expense.

1.13 TWENTY-FOUR (24) HOUR EMERGENCY SERVICE

- A. The Contractor shall maintain a 24-hour, 7-day a week telephone service and a local facility to handle emergency requirements such as settled trenches, clogged drains, rain damage, etc. The Contractor's emergency personnel shall be able to respond to emergency calls within thirty minutes. A list of the personnel and their telephone numbers shall be submitted to the Engineers, Highway and Water Departments and to the local Police and Fire Departments. This requirement shall apply during the entire length of the project.
- B. This list shall be submitted on the Contractor's letterhead and shall state that should an emergency arise during the implementation of this project, these people are to be contacted. The Contractor shall submit this letter at the Pre-Construction Conference.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

A. Existing Operations:

1. Existing water service shall be maintained at all times until the new main and services are tied in.
2. The Contractor shall not operate any of the Water District's infrastructure. The Water District shall be contacted one day in advance for any need to operate existing valves for isolation.
3. The contractor shall provide 48 hour notice to the Water District prior to performing live taps or service connections.

B. Minimize Interference:

1. The Contractor shall at all times conduct his operations so as to interfere as little as possible with existing works. The Contractor shall develop a program, in cooperation with the Engineer, Owner and interested officials, which shall provide for the construction and putting into service of the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted.
2. Work of connecting with, cutting into and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time and when the demands on the facilities best permit such interference. It may be necessary to work outside of normal working hours to minimize interference. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand.

3.2 CONSTRUCTION SEQUENCE

- A. Construction of the proposed water mains will not disrupt the existing water service.
- B. The Contractor shall submit to the Engineer and Owner for review and acceptance a complete schedule of his proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for doing the work.
- C. The Contractor must provide a sequence to demonstrate to the Engineer that the continuity and degree of treatment will not be adversely affected.

3.3 COORDINATION

- A. The Contractor shall properly coordinate with all local and state departments, affected by work occurring in proposed locations.
- B. Utility location and coordination shall be done by the contractor. Dig Safe shall be contacted prior to the layout or excavation of any work.

END OF SECTION

SECTION 01050COORDINATIONPART 1 - GENERAL1.1 DESCRIPTION

- A. Contractor is required to work in close proximity to Owner's existing facilities. The Contractor, under this Contract, will be responsible for coordinating construction activities with Owner to ensure that services, facilities, and safe working conditions are maintained.
- B. Any damage to existing structures, equipment and property, accepted equipment or structures, and property or work in progress by others; as a result of the Contractor's or his subcontractor's operations shall be made good by the Contractor at no additional cost to the Owner.
- C. All work shall be in accordance with the standards of the Town of Gardiner and shall meet all State and Local standards.

1.2 COORDINATION WITH OTHERS

- A. Gardiner Water District:
 - 1. All tie-ins and shut-downs of existing mains and services shall be closely coordinated with the Gardiner Water District.
 - 2. Final locations of services, hydrants, blow-offs, etc. will be decided by the Gardiner Water District.
- B. Central Maine Power Company (CMP)
The Contractor shall be responsible for coordinating all work in and around CMP facilities with CMP and bear all costs of CMP inspection requirements, temporary facilities relocation and all other requirements.
- C. Telephone Company
The contractor shall be responsible for coordinating all work around telephone facilities and shall bear all costs of inspection requirements, temporary facilities relocation, pole relocation, and all other requirements.
- D. Other Public Services
The Contractor shall be responsible for coordinating and maintaining public services to all properties. The Contractor shall notify police and fire departments and rescue squad at least 24 hours in advance of any street closings and detours.
- E. Maine Department of Transportation (MDOT):
 - 1. The Maine Department of Transportation (MDOT) will be undertaking a project to reconstruct a portion of Route 201. The Contractor shall be responsible for coordinating with the MDOT Contractor on water main placement, extent of blasting, restoration of surfaces, and maintenance of traffic. In addition, the Contractor shall coordinate with the MDOT Contractor as a means to minimize the disruption to the traveling public, avoid delays and to prevent damage to the MDOT project and to prevent damage to the water main installed as part of this project.

END OF SECTION

SECTION 01150MEASUREMENT AND PAYMENTPART 1 - GENERAL1.1 DESCRIPTION

- A. For lump sum items, payment shall be made to the Contractor in accordance with an accepted Progress Schedule and Schedule of Values on the basis of actual work completed.
- B. For unit-price items, payment shall be based on the actual amount of work accepted and for the actual amount of materials in place, as shown by the final measurements.
 - 1. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the Engineer.
 - 2. At the end of each day's work, the Contractor's Superintendent or other authorized representative of the Contractor shall meet with the Resident Project Representative and determine the quantities of unit price work accomplished and/or completed during the work day.
 - 3. The Resident Project Representative will then prepare two "Daily Progress Reports" which shall be signed by both the Resident Project Representative and Contractor's Representative.
 - 4. Once each month the Resident Project Representative will prepare two "Monthly Progress Summation" forms from the month's accumulation of "Daily Progress Reports" which shall also be signed by both the Resident Project Representative and Contractor's Representative.
 - 5. These completed forms will provide the basis of the Engineer's monthly quantity estimate upon which payment will be made. Items not appearing on both the Daily Progress Reports and Monthly Progress Summation will not be included for payment. Items appearing on forms not properly signed by the Contractor will not be included for payment.
 - 6. After the work is completed and before final payment is made therefor, the Engineer will make final measurements to determine the quantities of various items of work accepted as the basis for final settlement.

1.2 SCOPE OF PAYMENT

- A. Payments to the Contractor will be made for the actual quantities of the Contract items performed and accepted in accordance with the Contract Documents. Upon completion of the construction, if these actual quantities show either an increase or decrease from the quantities given in the Bid Form, the Contract unit prices will still prevail.
- B. The Contractor shall accept in compensation, as herein provided, in full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced by the Contract; also for all loss or damage arising from the nature of the Work, or from

the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work and until its final acceptance by the Engineer, and for all risks of every description connected with the prosecution of the work, except as provided herein, also for all expenses incurred in consequence of the suspension of the work as herein authorized.

- C. The payment of any partial estimate or of any retained percentage except by and under the approved final invoice, in no way shall affect the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.

1.3 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

- A. When alterations in the quantities of work not requiring supplemental agreements, as hereinbefore provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract price for the actual quantities of work done. No allowance will be made for anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

1.4 OMITTED ITEMS

- A. Should any items contained in the bid form be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract, and such action shall in no way invalidate the Contract, and no allowance will be made for items so eliminated in making final payment to the Contractor.

1.5 PARTIAL PAYMENTS

- A. Partial payments shall be made monthly as the work progresses. Partial payment shall be made subject to the provisions of the Supplemental and General Conditions.

1.6 PAYMENT FOR MATERIAL DELIVERED

- A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable, non-perishable materials and equipment which are to be incorporated into bid items, have not been used, and have been delivered to the construction site or placed in storage places acceptable to the Owner. Payment shall be subject to the provisions of the General and Supplementary Conditions.
- B. No payment shall be made upon fuels, supplies, lumber, false work, or other materials, or on temporary structures or other work of any kind which are not a permanent part of the Contract.

1.7 FINAL PAYMENT

- A. The Engineer will make, as soon as practicable after the entire completion of the project, a final quantity invoice of the amount of the Work performed and the value of such Work. Owner shall make final payments of the sum found due less retainages subject to the provisions of the General and Supplementary Conditions.

1.8 INCIDENTAL WORK

- A. Incidental work items for which separate payment is not made include (but are not limited to) the following items:
1. Clearing, grubbing and stripping
 2. Dust control
 3. Dewatering
 4. Clean-up
 5. Erosion control
 6. Loam and seeding
 7. Restoration of property, and replacement of fences, curbs, structures and other minor items disturbed by the construction activities.
 8. Coordination with the Owner, Utilities and others, including related inspection cost (refer to Section 01050)
 9. Utility crossings and relocations, unless payment is otherwise made
 10. Traffic Regulation
 11. Steel and/or wood sheeting as required, including that left in place
 12. Project record documents
 13. Materials testing
 14. Construction schedules, bonds, insurance, shop drawings, warranties, guarantees, certifications, and other submittals required by the Contract Documents
 15. Repair and replacement of utilities damaged by construction activities and corresponding proper disposal of removed materials
 16. Temporary utilities for construction and to maintain existing service during construction
 17. Quality assurance testing
 18. Temporary construction and other facilities not to be permanently incorporated into the Work necessary for construction sequencing and maintenance of operations
 19. Weather protection
 20. Permits not otherwise paid for or provided by the Owner
 21. Visits to the Project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required.
 22. On-site and other facilities acceptable to Engineer for the storage of materials, supplies and equipment to be incorporated into the Work
 23. Facilities start-up services required by the Contract Documents.
 24. Mobilization/demobilization.
 25. Test pits to determine existing utility locations, soils conditions, and as required to complete the project.
 26. 2" Rigid Board Insulation
 27. Pipe Markings
 28. Pavement Markings
 29. Removal of Existing Pavement
 30. Earthwork (except rock)
 31. Preconstruction Photos and Videos

32. Construction Administration and Insurance.
33. Remove and dispose existing hydrants or abandoned infrastructure.
34. Restoration including gravel and pavement not covered by other bid items.
35. Bends, fittings, thrust restraint, bolting hardware and trust blocks.
36. Removal of concrete roadway not covered under other bid items.

1.9 DESCRIPTION OF PAY ITEMS

- A. The following sections describe the measurement of and payment for the work to be done under the respective items listed in the Bid Form.
- B. Each unit or lump-sum price stated in the Bid Form shall constitute full compensation, as herein specified, for each item of the work completed.

Item No. 203.35 - Crushed Stone Fill

- A. Method of Measurement: The number of cubic meters of crushed stone to be measured for payment under Item No. 203.35 shall be the actual number of cubic meters placed as requested by and/or authorized by the Engineer as measured in place, at a maximum trench width of 0.9 meters.
- B. Basis of Payment: Crushed stone shall be paid for at the unit price per cubic meter stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, tools and construction equipment; and for all other work and expenses incidental thereto.

Item No. 206.07 - Ledge Excavation (Trench Method)

- A. Method of Measurement: The quantity of ledge excavation to be paid for under Item No. 206.07 shall be the actual number of cubic meters of ledge removed within the limits of normal excavation. For pipelines, the limits are defined by the vertical planes at a distance 1 meter (3 feet) apart and to a depth of 150mm (6 inches) below the bottom of the pipe. For structures, the limits are defined as 600mm (2 feet) beyond (horiz) the finished structure footing and 300mm (1 foot) below the bottom of the footing or floor. Field measurements for computing ledge volumes shall be determined by one of the following methods as selected by the Engineer.
 1. From ledge profile of exposed surface.
 2. By field measurements of the length of the trench ledge excavated and the trench limits for depth and width depth as determined by the field representative.
 3. The volume of ledge shall be determined from their average length, width, and depth as measured by the field representative. Boulders more than 1.5 cubic meters (2 cubic yards) in volume shall be paid for as ledge.
- B. Basis of Payment: Ledge excavation and disposal shall be paid for at the unit price per cubic meter as stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, tools, and equipment; for disposal of ledge; for furnishing and placing replacement granular borrow material; for conducting all preblast surveys and investigations; for repairing all overblast; for repairing all pavement damage outside the payment widths for paving; and for all other work and expenses incidental thereto.

Item No. 604.154 - 1800mm Manhole (6' dia. PRV Manhole)

- A. Method of Measurement: The quantity of manholes to be paid for under Item No. 604.154 shall be the actual number furnished and installed for service connections.
- B. Basis of Payment: Manholes shall be paid for at the unit price per each sewer in the Bid Schedule. Said unit price shall be full compensation for furnishing, installed, excavating, backfilling, placement of bedding material, labor, equipment and tools necessary for all work and expenses incidental thereto.

Item No. 801.16 - 150mm PVC Sanitary Sewer (6-inch)

- A. Method of Measurement: The quantity of gravity sewer pipe to be paid for under Item No. 801.16 shall be the actual length in meters as measured along the center line of the pipe as laid including all fittings.
- B. Basis of Payment: Gravity sewer pipe shall be paid for at the unit price per linear meter stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all pipes, pipe fittings, and other materials required for the installation of the pipelines; for clearing and grubbing; for cutting trees to required length; for dewatering; for installing the pipelines; for excavating, laying, setting, and jointing all pipes and fittings; for furnishing and placing all bedding, haunching and initial backfill; for backfilling; for furnishing and placing all gravel required in areas of gravel shoulder; for compaction; for pressure testing; for furnishing and placing all temporary and/or permanent sheeting and bracing; for all labor, tools and construction equipment; for all connections to the existing sewer unless otherwise paid for; and for all other work and expenses incidental thereto.
- C. Payment in the amount of 25% will be withheld until final testing of the respective length of sewer and manholes is complete.

Item No. 803.01 - Test Pit Excavation and Backfill

- A. Method of Measurement: The quantity to be paid for under Item No. 803.01 shall be the actual number of exploratory excavations as authorized by the Engineer.
- B. Basis of Payment: Test pit excavations shall be paid for at the unit price per each as stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, tools, and equipment; for backfilling and compacting; for temporary pavement; and for all other work and expenses incidental thereto.

Item No. 803.16 - 1.2M Diameter Precast Sewer Manhole (4-foot)

- A. Method of Measurement: The quantity of sewer manholes to be paid for under Item No. 803.16 shall be the actual number furnished and installed for service connections.
- B. Basis of Payment: Sewer manholes shall be paid for at the unit price per each sewer in the Bid Schedule. Said unit price shall be full compensation for furnishing, installed, excavating, backfilling, placement of bedding material, labor, equipment and tools necessary for all work and expenses incidental thereto.

Item Nos. 822.321, 822.33, 822.34, and 822.36 - Furnish and Install 100mm (4-inch), 150mm (6-inch), 200mm (8-inch) and 300mm (12-inch) Class 52 Ductile Iron Water Mains, All Depths

- A. Method of Measurement: The quantity of water main to be paid for under Item Nos. 822.321, 822.33, 822.34, and 822.36 shall be the actual length in meters as measured along the center line of the pipe as laid including all fittings and valves.
- B. Basis of Payment: Water main shall be paid for at the unit price per linear meter stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all pipes, pipe fittings (except valves), and other materials required for the installation of the pipelines; for clearing and grubbing; for cutting trees to required length; for dewatering; for installing the pipelines; for excavating, laying, setting, and jointing all pipes and fittings; for furnishing and placing all bedding, haunching and initial backfill; for backfilling; for furnishing and placing all gravel required in areas of gravel shoulder; for compaction; for pressure testing and disinfecting water main; for thrust blocks; for restraining joints; for furnishing and placing all temporary and/or permanent sheeting and bracing; for all labor, tools and construction equipment; for all connections to the existing water mains unless otherwise paid for; and for all other work and expenses incidental thereto.
- C. Payment in the amount of 25% will be withheld until testing and disinfecting the respective length of water main is complete.

Item Nos. 823.311, 823.3251, 823.331, and 823.3351 - Furnish and Install 300mm (12-inch), 200mm (8-inch), 150mm (6-inch), and 100mm (4-inch) Gate Valves with Boxes

- A. Method of Measurement: The quantity of gate valves to be paid for under Item Nos. 823.311, 823.3251, 823.331, and 823.3351 shall be the actual number of valves and valve boxes installed complete in place.
- B. Basis of Payment: Gate valves shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for installing, setting, and jointing; for restraining joints; for testing all valves and valve boxes; and for all other work and expenses incidental thereto.

Item No. 823.3253 - Furnish and Install 200mm (8-inch) Tapping Sleeve & Valve with Boxes

- A. Method of Measurement: The quantity of gate valves to be paid for under Item No. 823.3253 shall be the actual number of valves, sleeves and valve boxes installed complete in place.
- B. Basis of Payment: Gate valve and sleeve shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for installing, setting, and jointing; for restraining joints; for testing all valves, sleeves and valve boxes; and for all other work and expenses incidental thereto.

Item No. 824.30 - Furnish and Install Fire Hydrants

- A. Method of Measurement: The quantity of hydrants to be paid for under Item No. 9 shall be the actual number installed complete in place.
- B. Basis of Payment: Hydrants shall be paid for at the unit price each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for installing, setting and jointing for excavation; for all thrust blocks; restraining joints; for the hydrant gate and box, tee, pipe and hydrant; and of all other work and expenses incidental thereto.

Item No. 825.311 and 825.33 - Furnish and Install Corporation Stops and Taps - 19mm (3/4-inch) and 25mm (1-inch)

- A. Method of Measurement: Quantity of corporation stops and taps to be paid for under Item Nos. 825.311 and 825.33 shall be the actual number furnished and installed for service connections.
- B. Basis of Payment: Corporation stops and taps shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for all fittings, labor, equipment, and tools necessary for the installation of the corporation stops; tapping the main; and for all of the work and expenses incidental thereto.

Item No. 825.312, 825.331 - Furnish and Install Curb Stops - 19mm (3/4") and 825.331 (1-inch)

- A. Method of Measurement: The quantity of curb stops to be paid for under Item Nos. 825.312 and 825.331 shall be the actual number installed.
- B. Basis of Payment: Curb stops and boxes shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for all fittings, labor, equipment, tools and other materials required for the installation of the curb stop and box; for trench dewatering; for excavating and backfilling; for replacing or rebuilding shrubs, fences, lawns, trees, and other materials except other such items specifically included in the Bid Schedule; and for all other work and expenses incidental thereto.

Item No. 825.41 and 825.43 - Furnish and Install Copper Service Pipe - 19mm (3/4-inch) and 25mm (1-inch)

- A. Method of Measurement: The quantity of service pipe to be paid for under Item Nos. 825.41 and 825.43 shall be the actual length in meters as measured along the center line of the pipe as laid.
- B. Basis of Payment: Service pipe shall be paid for at the unit price per linear meter stated in the Bid Schedule. Said unit price shall be full compensation for all service pipe, labor, equipment, tools, and other materials required for the installation of service pipes; for trench dewatering; for excavating, laying, setting, and jointing all pipes and fittings; for cleaning, testing, and disinfecting; for backfilling; for replacing or rebuilding shrubs, fences, lawns, trees, or other materials, except other such items specifically included in the Bid Schedule; and for all other work and expenses incidental thereto.

Item No. 827.302 - Unsuitable Material Excavated Below Grade

- A. Method of Measurement: Quantity to be paid for under Item No. 827.302 shall be the actual number of cubic meters of material so excavated as instructed by the Engineer before excavation.
- B. Basis of Payment: Unsuitable material excavated below grade shall be paid for at the unit price per cubic meter stated in the Bid Schedule. Maximum trench width of 1 meter (3-feet). Said unit price shall be full compensation for furnishing all labor, equipment, and tools necessary for the excavation of unsuitable material below grade including the disposal of surplus materials; furnishing and placing replacement material; and for all other work and expenses incidental thereto.

END OF SECTION

SECTION 01200PROJECT MEETINGSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.
- B. Related work described elsewhere: The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and are not part of project meetings content.

1.2 QUALITY ASSURANCE

- A. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS

- A. Agenda items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.
- B. Minutes: The Engineer will compile minutes of each project meeting and will furnish a copy to the Contractor. The Contractor may make and distribute such other copies as he wishes.

PART 2 - PRODUCTS

(No products are required in this Section.)

PART 3 - EXECUTION3.1 MEETING SCHEDULE

- A. Except as noted below for Preconstruction Meeting, project meetings will be held monthly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

- A. To the maximum extent practicable, meetings will be held at the job site in the Engineer's field office.

3.3 PRECONSTRUCTION MEETING

- A. Preconstruction meeting will be scheduled within twenty days after the Effective Date of the Agreement, but before the Contractor starts work at the site. Provide

attendance by authorized representatives of the Contractor and all major subcontractors. The Engineer will advise other interested parties and request their attendance.

- B. Minimum agenda: Distribute data on, and discuss:
1. Identification of key project personnel for Owner, Engineer, Contractor, funding/regulatory Agencies.
 2. Responsibilities of Owner, Engineer, Resident Project Representative, Contractor.
 3. Channels and procedures for communications.
 4. Construction schedule, including sequence of critical work.
 5. Easements, permits.
 6. Contract Documents, including distribution of required copies of original documents and revisions.
 7. Processing of Shop Drawings and other data submitted to the Engineer for review.
 8. Processing of field decisions and Change Orders.
 9. Rules and regulations governing performance of the Work, including funding/regulatory Agency requirements.
 10. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters.

3.4 PROJECT MEETINGS

- A. Attendance: To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The Superintendent shall attend. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved.
- B. Minimum agenda:
1. Review, revise as necessary, and approved minutes of previous meeting.
 2. Review progress of the Work since last meeting, including status of submittals for approval.
 3. Review schedule of work to be accomplished prior to next meeting.
 4. Discuss monthly partial payment request.
 5. Review status of change order requests and Work Directive Changes.
 6. Identify problems which impede planned progress.
 7. Develop corrective measures and procedures to regain planned schedule.
 8. Complete other current business.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: Within ten (10) days after the effective date of the Agreement between Owner and Contractor submit to the Engineer an estimated progress schedule as specified herein.
- B. Form of Schedules:
 - 1. Narrative: Completely describe the construction methods to be employed.
 - 2. Network Analysis System:
 - a. Provide a separate horizontal schedule line for each trade or operation and show concurrent and preceding activities.
 - b. Present in chronological order the beginning of each trade or operation showing duration and float time.
 - c. Scale: Identify key dates and allow space for updating and revision.
 - 3. Mathematical Analysis:
 - a. A mathematical analysis shall accompany the network diagram. A computer printout will be acceptable.
 - b. Information shall be included on activity numbers, duration, early start, late start, etc. and float times.
- C. Content of Schedules:
 - 1. Provide complete sequence of construction by activity:
 - a. Shop Drawings, Project Data and Samples:
 - 1) Submittal dates.
 - 2) Dates reviewed copies will be required.
 - b. Decision dates for:
 - 1) Products specified by allowances.
 - 2) Selection of finishes.
 - c. Estimated product procurement and delivery dates.
 - d. Dates for beginning and completion of each element of construction.
 - 2. Identify work of separate phases and logically grouped activities.
 - 3. Show the projected percentage of completion for each item of work as of the first day of each month.
 - 4. Provide separate sub-schedules, if requested by the Engineer, showing submittals, review times, procurement schedules, and delivery dates.
- D. Updating:
 - 1. Show all changes occurring since previous submission.
 - 2. Indicate progress of each activity, show completion dates.
 - 3. Include:
 - a. Major changes in scope.
 - b. Activities modified since previous updating.

- c. Revised projections due to changes.
- d. Other identifiable changes.
- 4. Provide narrative report, including:
 - a. Discussion of problem areas, including current and anticipated delay factors.
 - b. Corrective action taken, or proposed.
 - c. Description of revisions that may affect schedules.

1.2 SUBMITTALS

- A. Submit updated schedules with each progress payment request.
- B. Submit 4 copies of initial and updated schedules to the Engineer.

END OF SECTION

SECTION 01340

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Submit to the Engineer, Shop Drawings, Operation and Maintenance Manuals, Manufacturers' Certificates, Project Data, and Samples required by the Specification Sections.

B. Related Work Specified Elsewhere:

1. Construction Schedules: Section 01310
2. Project Record Documents: Section 01720
3. General Conditions: Section 00700.

1.2 SHOP DRAWINGS

- A. Shop Drawings are required for each and every element of the work. Each shop drawing shall be assigned a sequential number for purposes of easy identification, and shall retain its assigned number, with appropriate subscript, on required resubmissions.
- B. Shop Drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the Contractor, his subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.
- C. The Contractor shall submit to the Engineer a minimum of six (6) copies of Shop Drawings and approved data. The Engineer will retain three (3) copies (for Owner's, Engineer's and Field Representative's files) and return three (3) copies to the Contractor for distribution to subcontractors, suppliers and manufacturers. If the Contractor requires more than three (3) then the number of copies submitted shall be adjusted accordingly. The only exception to the above is that all shop drawings which incorporate blue line type drawings shall be submitted with only one good quality reproducible. The Engineer will return the one marked up reproducible to the Contractor.
- D. The Contractor shall provide a copy of the completed Submittal Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of each shop drawing. Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the work.

- E. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.
- F. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.
- G. Until the necessary review has been made, the Contractor shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.
- H. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. Shop drawings shall be of standardized sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 24 inches by 36 inches; (b) 11 inches by 17 inches, and (c) 11 inches by 8-1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein may be returned for resubmittal without being reviewed.
- I. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer.
- J. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in his letter of transmittal.
- K. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, he shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications.
- L. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such

review and checking, as determined by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be required by the Engineer in an accurate, complete, and timely fashion.

1.3 SAMPLES

- A. The Contractor shall submit samples when requested by the Engineer to establish conformance with the specifications, and as necessary to define color selections available.

1.4 OPERATION AND MAINTENANCE MANUALS

- A. The Contractor shall furnish the Engineer six (6) copies of a complete instruction manual for installation, operation and maintenance of each item specified. At least 3 months prior to the expected substantial completion date, the Contractor shall submit to the Engineer all manuals in accordance with the requirements specified herein.
- B. Manuals shall include operating and maintenance information on all systems and pieces of equipment. The manual shall contain sufficient data to install, operate, maintain and repair all components of the equipment, design data specific to the project. All information required by the Operations and Maintenance Manual Certification Form described herein and any additional information deemed necessary by the Owner and Engineer for proper installation, operation and maintenance.
- C. The Contractor shall provide a copy of the complete Operations and Maintenance Manual Certification Form (copy provided for the Contractor's use at the end of this Specification Section) which shall be attached to every copy of each Operations and Maintenance Manual submitted.

1.5 MANUFACTURER'S CERTIFICATES

- A. Prior to accepting the installation, the Contractor shall submit manufacturer's certificates for each item specified.
- B. Such manufacturer's certificates shall state that the equipment has been installed under either the continuous or periodic supervision of the manufacturer's authorized representative, that it has been adjusted and initially operated in the presence of the manufacturer's authorized representative, and that it is operating in accordance with the specified requirements, to the manufacturer's satisfaction. All costs for meeting this requirement shall be included in the Contractor's bid price.

1.6 SUBMISSION REQUIREMENTS

- A. Accompany submittals with transmittal letter, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.

4. The number of each Shop Drawing, Project Data and Sample submitted.
 5. Notification of deviations from Contract Documents.
 6. Other pertinent data.
- B. A completed Submittal Certification Form shall be attached to each copy of each shop drawing and must include:
1. Identification of deviations from Contract Documents.
 2. Contractor's stamp, initialed or signed, certifying review of the submittal, verification of field measurements and compliance with Contract Documents.
 3. Where specified or when requested by the Engineer, manufacturer's certification that equipment, accessories and shop painting meet or exceed the Specification requirements.
 4. Where specified, manufacturer's guarantee.

1.7 RESUBMISSION REQUIREMENTS

- A. Revise initial drawings as required and resubmit as specified for initial submittal.
- B. Indicate on drawings any changes which have been made other than those required by Engineer.

1.8 ENGINEER'S REVIEW

- A. The review of shop and working drawings hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.

SUBMITTAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

TRANSMITTAL NUMBER: _____ SHOP DRAWING NUMBER: _____

SPECIFICATION SECTION OR DRAWING NO: _____

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the material and/or equipment meets or exceeds the project specification requirements with

☐ NO DEVIATIONS

or

☐ A COMPLETE LIST OF DEVIATIONS AS FOLLOWS^a:

By: _____ By: _____
Contractor^b Manufacturer^c

Date: _____ Date: _____

^a Any deviations not brought to the attention of the Engineer for review and concurrence shall be the responsibility of the Contractor to correct, if so directed.

^b Required on all submittals

^C When required by specifications

Page ____ of ____

General Contractor's Stamp

OPERATIONS AND MAINTENANCE MANUAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

TRANSMITTAL NUMBER: _____ SHOP DRAWING NUMBER: _____

SPECIFICATION SECTION OR DRAWING NO: _____

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced operations and maintenance manual has been reviewed by the undersigned and I/we certify that the manual is customized as needed for this project, is suitable for mounting in a 3-ring binder, and contains the following items:

- | | |
|---|---|
| <input type="checkbox"/> Table of Contents | <input type="checkbox"/> Project-Related Design Data |
| <input type="checkbox"/> Maintenance Schedule and Summary | <input type="checkbox"/> Wiring Diagrams |
| <input type="checkbox"/> Lubrication Schedule | <input type="checkbox"/> Equipment Layout Drawings & Schematics |
| <input type="checkbox"/> Troubleshooting Information | <input type="checkbox"/> Equipment Performance Curves |
| <input type="checkbox"/> Warranty Information | <input type="checkbox"/> Parts and Service Contact Information ^a |
| <input type="checkbox"/> Startup, Operation, Shutdown Procedures | <input type="checkbox"/> Manufacturer Contact Information ^a |
| <input type="checkbox"/> Shop Drawings corrected to As-Built conditions | <input type="checkbox"/> List of part numbers for all components |
| | <input type="checkbox"/> List of spare parts supplied and cost |

By: _____
Contractor^a

By: _____
Manufacturer^b

Date: _____

Date: _____

^a Contact information shall include name, address and telephone number.

^b Required on all Operation and Maintenance Manuals.

^c When required by Specifications.

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General Contractor's Stamp

END OF SECTION

SECTION 01370SCHEDULE OF VALUESPART 1 - GENERAL1.1 DESCRIPTION

A. Extent of Work:

1. Provide a detailed breakdown of the agreed Contract Sum showing values allocated to each of the various parts of the water main work, as specified herein and in other provisions of the Contract Documents.

B. Related Work Specified Elsewhere:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, and Sections of these Specifications.
2. Schedule of values is required under the General Conditions.
3. Schedule of values is required to be compatible with applications for progress payment.

1.2 QUALITY ASSURANCE

A. Use required means to assure arithmetical accuracy of the sums described.

B. When so required by the Engineer, provide copies of the subcontracts or other data acceptable to the Engineer substantiating the sums described.

1.3 SUBMITTALS

A. Prior to first application for payment, submit a proposed schedule of values to the Engineer.

1. Secure the Engineer's approval of the schedule of values prior to submitting first application for payment.

END OF SECTION

SECTION 01380PRE-CONSTRUCTION PHOTOGRAPHSPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Contractor shall utilize still photographs and video tapes to obtain a visual record of the project area, a copy of same shall be given to Engineer.
2. Notify Engineer at least three (3) working days prior to photographing or videotaping the project area so Engineer may, at his option, observe.

1.2 QUALITY

- A. Quality shall be such that the condition of existing pavement, curbing, driveway entrances, sidewalks, etc. can be readily determined.

1.3 SUBMITTAL OF PRINTS

- A. Submit hard copy prints, negatives (or electronic files on CD ROM, if digital) and video tapes to the Engineer prior to any construction work.
- B. The quality of the photos and video tapes are subject to approval by the Engineer prior to the start of construction work in the areas shown by the photos.

END OF SECTION

SECTION 01400QUALITY CONTROLPART 1 - GENERAL1.1 REQUIREMENTS INCLUDED

- A. General Quality Control.
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.
- E. Manufacturer's Field Services.
- F. Testing Laboratory Services.

1.2 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions: Inspection and testing required by governing authorities.
- B. Section 01340 - Submittals: Submittal of Manufacturer's Instructions.
- C. Section 02200 - Earthwork.
- D. Section 02201 - Excavation and Embankment.
- E. Section 02250 - Trench Backfilling, Compaction Control and Testing.

1.3 QUALITY CONTROL

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

1.4 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.5 MANUFACTURERS' INSTRUCTIONS

- A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

1.6 MANUFACTURERS' CERTIFICATES

- A. When required by individual Specifications Section, submit manufacturer's certificate that products meet or exceed specified requirements.

1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in respective Specification Sections, require supplier and/or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Representative shall submit written report to Engineer listing observations and recommendations.

1.8 TESTING LABORATORY SERVICES

- A. Owner will employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services wherever an Independent Testing Laboratory is required by individual specification sections listed in paragraph 1.2 above, unless otherwise indicated.
- B. Services will be performed in accordance with requirements of governing authorities and with specified standards.
- C. Reports will present observations and test results and indicate compliance or non-compliance with specified standards and with Contract Documents. Independent Testing Laboratory will submit one copy of each report directly to each of the following: Engineer, Resident Project Representative, Contractor. Reports will be mailed within 5 days of obtaining test results. If test results indicate deficiencies, Independent Testing Laboratory shall telephone or FAX results to Engineer, Resident Project Representative and Contractor within 24 hours.
- D. Contractor shall cooperate with Independent Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.
- E. Contractor shall coordinate all testing work and shall notify Engineer and Independent Testing Laboratory at least 24 hours prior to performing work requiring testing services. If scheduled tests or sampling cannot be performed because the work is not ready as scheduled, testing costs associated with the delay will be determined by Engineer and invoiced by Owner to Contractor. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price. If adequate notice is not provided, Contractor shall suspend work on that portion of the Project until testing can be performed. Such suspension will not be grounds for a claim against the Owner for delay, nor will it be an acceptable basis for an extension of time.
- F. Payment for Independent Testing Laboratory services shall be as follows:
 - 1. General: Testing which is the responsibility of the Contractor will be considered an incidental item unless otherwise indicated in Section 01150, Measurement and Payment.
 - 2. Contractor's Convenience Testing: Inspections and tests performed for Contractor's convenience will be paid for by Contractor.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01580PROJECT IDENTIFICATION AND SIGNSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included:
 - 1. Provide and erect a sign at the project site to identify the project and to indicate that the Federal and State Governments are participating in the development of the project.
- B. Do not place, or allow the placement of, other advertising sign boards at the project site or along rights-of-way furnished for the project work.

PART 2 - PRODUCTS2.1 MATERIAL AND DESIGN

- A. Construct a sign of 3/4-inch exterior grade, high density overlaid plywood or other material, approved by the Engineer, suitable for signs.

PART 3 - EXECUTION3.1 INSTALLATION

- A. Erect the sign in a prominent location as approved by the Engineer.
- B. Construct the sign in accordance with the following sample Drawing.
- C. Remove the sign when the Work has been completed at no additional cost to the Owner.

END OF SECTION

temporary construction sign for DWSRF projects

WHITE BACKGROUND

BLACK LETTERING

Project Title (include Town / District name)

Engineer:

Contractor:

Total Project Cost:

Financed by:

**DWSRF Program: Maine Department of Human Services and
Maine Municipal Bond Bank**

This institution is an equal opportunity provider

SRF
State Revolving Loan Fund

LIGHT BLUE
WAVE, FADING
TO LIGHT GREEN

BLACK LETTERING

MINIMUM SIGN DIMENSIONS: 1200 x 2400 x 19 MM (4' x 8' x 3/4") EXTERIOR
PLYWOOD (A-B GRADE)
MINIMUM LETTERING SIZE: 5 CM (2-INCHES)

SECTION 01710PROJECT CLEANINGPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Maintain premises and public properties free from accumulations of waste, debris, and rubbish, caused by operations.
2. At completion of work, remove waste materials, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces. Leave project clean and ready for use.

1.2 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies: Conduct cleaning and disposal operations in accordance with all applicable local and state laws, ordinances, and code requirements.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturers.

PART 3 - EXECUTION3.1 PERFORMANCE

A. Cleaning During Construction:

1. Execute cleaning operations to ensure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.
2. Entirely remove and dispose of material or debris during the progress of the work that has washed into or has been placed in watercourses, ditches, gutters, drains, catch basins, or elsewhere as a result of the Contractor's operations.
3. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
4. At reasonable intervals during the progress of work, clean the site and dispose of waste materials, debris, and rubbish.
5. Clean interiors of buildings, when applicable, prior to finish painting, and continue to clean on an as-needed basis until buildings are ready for occupancy.
6. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw material from heights.

7. When applicable, schedule cleaning operations so that dust and other contaminants resulting from the cleaning process will not fall on wet, newly painted surfaces.
- B. Control of Hazards:
1. Store volatile wastes in covered metal containers, and remove from premises daily.
 2. Prevent accumulation of wastes which may create hazardous conditions.
 3. Provide adequate ventilation during use of volatile or noxious substances.
- C. Disposal:
1. Do not burn or bury rubbish and waste materials on project site.
 2. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.
 3. Do not dispose of wastes into streams or waterways.
- D. Final Cleaning:
1. Employ experienced workmen, or professional cleaners, for final cleaning.
 2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from all sight-exposed interior and exterior finished surfaces.
 3. Repair, patch and touch up marred surfaces to specified finishes.
 4. Broom clean paved surfaces.
 5. Rake clean non-paved surfaces of the project site.
 6. Restore to their original condition those portions of the site not designated for alterations by the Contract Documents.

END OF SECTION

SECTION 01720PROJECT RECORD DOCUMENTSPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Keep accurate record documents for all additions, substitutions of material, variations in work, and any other additions or revisions to the Contract.

B. Related Work Specified Elsewhere:

1. Shop Drawings, Project Data, and Samples are specified in "General Conditions" and Section 01340, Submittals.

1.2 MAINTENANCE OF DOCUMENTS

A. Maintain at job site, one copy of:

1. Contract Drawings
2. Specifications
3. Addenda
4. Reviewed Shop Drawings
5. Change Orders
6. Any other modifications to the Contract
7. Field Test Reports

B. Store documents in files and racks specifically identified for this use, that are apart from documents used for construction.

C. File documents in a logical manner indexed for easy reference.

D. Maintain documents in clean, dry, legible condition.

E. Do not use record documents for construction purposes.

F. Make documents available at all times for inspection by the Engineer and Owner, and by the end of the project, transmit these documents to the Engineer.

1.3 RECORDING

A. Label each document "PROJECT RECORD" in large high printed letters.

B. Keep record documents current and do not permanently conceal any work until required information has been recorded.

C. General Field Recording Issues:

1. All ties should be taken from existing, permanent features such as utility poles, corners of houses and hydrants. Porches, sheds or other house additions should be avoided for they could be torn down. A minimum of two ties should be taken.
2. Stations should be recorded to the nearest foot.
3. Inverts should be recorded to the nearest hundredth of a foot.
4. Elevations should be recorded to the nearest hundredth of a foot.
5. Building dimensions should be recorded to the nearest 1/4".

D. Project Record Drawings - Legibly mark Contract Drawings to record existing utilities and actual construction of all work, including but not limited to the following (where applicable):

1. Existing Utilities

Water mains and services, water main gate valves, sewer mains and services, storm drains, culverts, steam lines, gas lines, tanks and other existing utilities encountered during construction must be accurately located and shown on the Drawings. In congested areas supplemental drawings or enlargements may be required.

- a. Show any existing utilities encountered in plan and profile and properly labeled showing size, material and type of utility. Ties should be shown on plan. Utility should be drawn to scale in section (horizontally and vertically) and an elevation should be called out to the nearest hundredth of a foot.
- b. When existing utility lines are broken and repaired, ties should be taken to these locations.
- c. If existing water lines are replaced or relocated, document the area involved and pipe materials, size, etc. in a note, and with ties.

2. Manholes, Catch Basins, Valve Pits and other structures.

- a. Renumber structure stationing to reflect changes.
- b. Show ties to center of structure covers or hatches.
- c. In general, show inverts at center of structures. However, for manholes with drop structures, or steep channels (greater than 0.2' change on slope), show inverts at face of manhole.
- d. Show inverts for other structures at the face of the structure.
- e. Draw any new structures that are added on plan and profile.
- f. Show any field or office redesigns.
- g. Redraw plan if the structure's location is moved more than 5 feet in any direction. [Note: It is important to show existing utilities, as outlined in Paragraph 1 above, especially if they were one reason for relocating the sewer, manholes and other structures.]
- h. Redraw profile if inverts changed by more than 6 inches.

3. Gravity Sewer Line

- a. Change sewer line slopes indicated on Drawings if inverts are changed.
- b. Draw any new gravity lines that are added on plan and profile.
- c. Show any field or office redesigns.
- d. Redraw the sewer line profile if manhole inverts are redrawn.
- e. Redraw the sewer line on plan corresponding to relocated manholes.

4. Water Mains and Force Mains

- a. Show ties to the location of all valves, bends (horizontal and vertical), tees and other fittings. The use of thrust blocks should be recorded.
- b. Revise elevations indicated on the Drawings to reflect actual construction.

5. House Services

- a. Draw all house services (even to empty lots) on plan, and show ties.
- b. Show ties or distances to wyes from manhole.

- c. Show chimneys heights in the profile.
 - d. The Wright-Pierce "Sanitary Sewer Service Location" forms shall be used to record sewer service information. A copy of these forms should be provided to the Owner, along with the Record Drawing Set.
6. Septic Tanks
- a. Show ties to center of tank covers.
 - b. Label size of septic tanks that are other than standard 1000 gallon capacity.
 - c. The Wright-Pierce "Sanitary Sewer Service Location" forms shall be used to record septic tank information. A copy of these forms should be provided to the Owner, along with the Record Drawing Set.
7. Ledge
- a. Ledge profiles should be shown. Note whether the plotted ledge profile reflects undisturbed or expanded conditions.
8. Yard Piping and Buried Electrical Conduit
- a. Site piping should be drawn to reflect the installed locations, with ties and elevation of all bends (horizontal and vertical).
 - b. Show routing for electrical conduits and pull boxes, especially in close proximity to buildings and when the conduits change direction or cross process piping.
9. Roads
- a. Show centerline road profile and level spot elevations.
 - b. Show pavement widths.
 - c. On road cross sections, show the pavement cross slope.
 - d. Show any deviations from the design plans.
10. Buildings
- a. In general, small changes to structures should not be redrawn. If any dimensional changes were made in the field, the numerical change should be made on the Drawing and be properly labeled. Update dimensions and elevations on Drawings.
 - b. Show finished concrete elevations (top of slab, top of wall, top of footing, etc.). Redraw any foundation, frost wall, etc. that was modified, deepened, or altered during construction.
 - c. Adjust finished concrete horizontal dimensions that are shown on the Drawings.
 - d. Adjust structural steel elevations and horizontal dimensions that are shown on the Drawings.
 - e. Show location of anchors, construction and control joints, and waterstops, when they are different from those shown on Drawings.
 - f. Any additions or major changes should be shown in both plan and elevation (i.e. relocated doors, opposite door swings, change in wall location, relocation of floor drains).
 - g. Show approximate location and routing of electrical conduits in walls, slabs and ceilings. Most conduits are run in groups, therefore, use range of measurements to define location for entire section of conduits.

- h. Special circuits for computers, alarms and instrumentation should be shown.
 - i. Show any changes in location and elevation of ductwork and devices, fuel piping and equipment, and heat piping and equipment.
 - j. Location of gravity sewer system below slabs in buildings should be shown, if changes are made in the configuration.
 - k. If wall mounted electrical switches, control boxes, thermostats, etc. have been relocated significantly, (other side of door, or to a wall other than indicated diagrammatically on electrical plans) make the revision accordingly.
- E. Specifications and Addenda - Legibly mark up each section to record:
- 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Change Order, Field Order, or other method.

1.4 SUBMITTALS

- A. At the completion of the project, deliver record documents to the Engineer.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
 - 1. Date, project title and number.
 - 2. Contractor's name and address.
 - 3. Title and number of each record document with certification that each document is completed and accurate.
 - 4. Signature of Contractor, or his authorized representative.
- C. Failure to supply all information on the Project Record Drawings as specified in Part 1.3 may result in additional retainage from monthly partial payment requests, and in non-approval of final payments of the Contract and/or if contract time (as specified in accordance with the Standard General Conditions of the Construction Contract) has elapsed, this shall be grounds for the enactment of the liquidated damages as specified.

END OF SECTION

DIVISION 2SITE WORKScope of Work

Provide, install and test all site work and appurtenant work in complete accordance with the Drawings and Specifications.

Contractor's Duties

Except as specifically noted, provide and pay for all labor, materials, equipment, tools, machinery, water, heat, other facilities and services necessary for proper execution and completion of work.

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END OF SECTION

SECTION 02200EARTHWORKPART 1 - GENERAL1.1 DESCRIPTION

- A. The Work described by this Section consists of all earthwork encountered and necessary for construction of the project as indicated in the Contract Documents, and includes but is not limited to the following:
 - 1. Excavation
 - 2. Backfilling and Filling
 - 3. Compaction
 - 4. Embankment Construction
 - 5. Grading
 - 6. Providing soil material as necessary
 - 7. Disposal of excess suitable material and unsuitable materials
- B. Related Work Specified Elsewhere: (When Applicable)
 - 1. The use of explosives is specified in the Supplementary Conditions section of this Contract, and in Division 1.
 - 2. Traffic Regulation is specified in Division 1.
 - 3. Clearing and Grubbing, Dewatering, Filter Fabric, Temporary Erosion Control, Stripping and Stockpiling of Topsoil, Sheeting, Landscaping, and Paving are specified in the appropriate sections of this Division.
 - 4. Section 01400 - Quality Control.
 - 5. Pipe, fittings and valves are specified in Division 2.

1.2 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
 - 1. All work shall be performed and completed in accordance with all local, state and federal regulations.
 - 2. The General Contractor shall secure all other necessary permits unless otherwise indicated from, and furnish proof of acceptance by, the municipal and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.
- B. Line and Grade:
 - 1. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the work.
- C. Testing Methods:
 - 1. Gradation Analysis: Where a gradation is specified the testing shall be in accordance with ASTM C-117-90 and ASTM C-136-93 (or latest revision).
 - 2. Compaction Control:
 - a) Unless otherwise indicated, wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place density divided by the maximum density and multiplied by 100. The maximum density

shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture-Density Relations of Soil Using 10-lb. Hammer and 18-in. Drop, Designation D-1557-91 (Modified Proctor), or latest revision, unless otherwise indicated.

- b) The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone method, Designation D 1556-90, (or latest revision) or Nuclear method Designation D2922.
- c) Wherever specifically indicated, maximum density at optimum moisture may be determined by ASTM Standard Methods of Test for Moisture Density Relations of Soils, ASTM D-698-91 (Standard Proctor).
- d) An Independent Testing Laboratory will be retained by the Owner to conduct all laboratory and field soil sampling and testing, and to observe earth work and foundation construction activities. Laboratory testing will consist of sieve analyses, natural water content determinations, and compaction tests. Field testing will consist of in-place field density tests and determination of water contents.

1.3 SUBMITTALS

- A. Collection of samples and testing of all materials for submittals shall be performed by the Independent Testing Laboratory and paid for by the Contractor until the materials are approved by the Owner or Engineer.
- B. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.
- C. Submit test results (including gradation analysis) and source location for all borrow material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.
- D. Submit moisture density curve for each type of soil (on site or borrow material) to be used for embankment construction or fill beneath structures or pavement.

1.4 TESTS

The Independent Testing Laboratory shall conform to the following procedures and standards:

- A. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.
- B. All testing shall be performed by a qualified Independent Testing Laboratory acceptable to the Engineer and Contractor at the Owner's expense unless otherwise indicated (see Section 01400 - Quality Control).
- C. Field density tests on embankment materials shall be as follows:
 - 1. Tests shall be taken on every 200 cubic yards of embankment material.
- D. Paved Areas and Building Slab Subgrade: Make at least one field density test of subgrade for every 2,000 sq. ft. of paved area or building slab, but in no case less than 3 tests. In each compacted fill layer, make one field density test for every

2,000 sq. ft. of overlaying building slab or paved area, but in no case less than 3 tests.

- E. Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.
- F. Foundation Wall Backfill: Take at least one (1) field density tests per lift per wall at locations and elevations as designated by the Engineer.
- G. In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the Engineer.
- H. Additional density testing will be required by the Engineer if the Engineer is not satisfied with the apparent results of the Contractor's compaction operation.
 - 1. If the test results fail to meet the requirements of these specifications, the Contractor shall undertake whatever action is necessary, at no additional cost to the Owner, to obtain the required compaction. The cost of retesting will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount for retesting will be deducted from the Contract Price. No allowance will be considered for delays in the performance of the work.
 - 2. If the test results pass and meet the requirements of these Specifications, the cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

1.5 JOB CONDITIONS

A. Site Information:

- 1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner and Engineer will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data are made available for the convenience of Contractor.
- 2. Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.

B. Existing Utilities and Structures:

- 1. The locations of utilities and structures shown on the Drawings are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities or structures within the project area.

PART 2 - PRODUCTS

2.1 SOIL MATERIAL

- A. Aggregate Base: Shall be screened or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. Type B Aggregate for base shall not contain particles of rock that will not pass the 4 inch square mesh sieve. The gradation of the part that passes a 3-inch sieve shall meet the following grading requirements:

<u>Sieve Designation</u>	<u>Percent by Weight Passing Square Mesh Sieves</u>
	Type B <u>Aggregate</u>
1/2 inch	35-75
1/4 inch	25-60
No. 40	0-25
No. 200	0-5

- B. Aggregate Leveling Course and Untreated Surface Course: Shall be screened or crushed gravel consisting of hard durable particles which are free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the material shall meet the grading requirements of the following table:

<u>Sieve Designation</u>	<u>Percentage by Weight Passing Square Mesh Sieves</u>
1 inch	95-100
3/4 inch	90-100
No. 4	40-65
No. 10	10-45
No. 200	0-7

- C. Common Borrow: Shall consist of approved material required for the construction of the work where designated. Common borrow shall be free from frozen material, perishable rubbish, peat, organic, and other unsuitable material.

<u>Sieve Designation</u>	<u>Percentage by Weight Passing Square Mesh Sieves</u>
6-inch	100
No. 200	0-5

Common borrow may be used for embankments unless otherwise indicated and provided that the material is at a moisture content suitable for compaction to the specified density. No rocks shall exceed 3/4 of the depth of the specified lift thickness.

- D. Crushed Stone: Shall be a uniform material consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, containing angular pieces, as are those which come from a mechanical crusher. Gradation requirements shall be as follows:

<u>Sieve Designation</u>	<u>Percent by Weight Passing Square Mesh Sieve</u>
1-1/2 inch	100
1 inch	95-100
1/2 inch	25-60
No. 4	0-10

- E. Screened Stone: Shall be a well graded stone consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, meeting the following gradation requirements:

<u>Sieve Designation</u>	<u>Percent by Weight Passing Square Mesh Sieve</u>
1 inch	100
3/4 inch	90-100
3/8 inch	20-55
No. 4	0-10
No. 8	0-5

- F. Select Fill: Shall consist of well graded granular material free of organic material, loam, wood, trash, snow, ice, frozen soil and other objectionable material and having no rocks with a maximum dimension of over 4 inches and meeting the following gradation requirements, except where it is used for pipe bedding in which case the maximum size shall be 2 inches.

<u>Sieve Designation</u>	<u>Percent by Weight Passing Square Mesh Sieve</u>
4 inch	100
3 inch	90-100
1/2 inch	25-90
No. 40	0-30
No. 200	0-5

- G. Sand: Shall be well graded durable material free of organic matter and conform to the following gradation requirements:

<u>Sieve Designation</u>	<u>Percent by Weight Passing Square Mesh Sieve</u>
3/8 inch	100
No. 4	95-100
No. 16	50-85

No. 50	10-30
No.100	2-10
No.200	0-5

Sand conforming to the requirement for fine aggregate in ASTM Standard Specifications for Concrete Aggregate, Designation C-33, will meet the above requirement.

2.2 CONCRETE

- A. If concrete is required for excess excavation, provide 3,000 psi concrete complying with requirements of Section 03300.

2.3 FILTER FABRIC

- A. If filter fabric is required, refer to Section 02260.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions under which excavating, backfilling, filling, compaction and grading are to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 EXCAVATION

A. General:

1. Excavation consists of removal and disposal of all material encountered when establishing line and grade elevations required for execution of the work.
2. The Contractor shall make excavations in such manner and to such widths as will give suitable room for building the structures or laying and jointing the piping; shall furnish and place all sheeting, bracing, and supports; shall do all cofferdamming, pumping, and draining; and shall render the bottom of the excavations firm, dry and acceptable in all respects.
3. All excavation shall be classified as either earth or ledge.
 - a) Earth Excavation shall consist of the removal, hauling and disposal of all earth materials encountered during excavation including but not limited to native soil or fill, pavement (bituminous or concrete), existing sewers and manholes, ashes, loam, clay, swamp muck, debris, soft or disintegrated rock or hard pan which can be removed with a backhoe, or a combination of such materials, and boulders measuring less than one cubic yard.
 - b) Ledge Excavation: Shall consist of the removal, hauling, and disposal of all ledge or rock encountered during excavation. "Ledge" and "rock" shall be defined as any natural compound, natural mixture that in the opinion of the Engineer can be removed from its existing position and state only by drilling and blasting, wedging, sledging, boring or breaking up with power operated tools. No boulder, ledge, slab, or other single

piece of excavated material less than one cubic yard in total volume shall be considered to be rock unless, in the opinion of the Engineer it must be removed from its existing position by one of the methods mentioned above.

4. The Contractor shall not have any right of property in any materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the Engineer. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Engineer to be unsuitable for backfilling. The Contractor shall dispose of unsuitable and excess material in accordance with the applicable sections of the Contract Documents.
- B. Additional Excavation: When excavation has reached required subgrade elevations, notify the Engineer and Resident Project Representative who will observe the conditions.
1. If material unsuitable for the structure or paved area or pipeline (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the Drawings and/or Specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted select fill, screened stone, crushed stone, or concrete as directed by the Engineer.
 2. All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor and disposed of at locations in accordance with all State and local laws and the provisions of the Contract Documents.
- C. Unauthorized Excavation: Shall consist of removal of materials beyond indicated subgrade elevations or dimensions without specific authorization of Engineer. Unauthorized excavation, as well as remedial work required by the Engineer shall be at the Contractor's expense. Remedial work required is as follows:
1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation with select fill or screened stone compacted to 95%. Provide 12" minimum select fill or screened stone directly under footings. Concrete fill may be used to bring elevations to proper position, when acceptable to Engineer.
 2. If the bottom of a trench is excavated beyond the limits indicated, backfill the resulting void with thoroughly compacted screened stone, unless otherwise indicated.
 3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Engineer.
- D. Structural Excavation:
1. Shall consist of the removal, hauling, disposal, of all material encountered in the excavation to permit proper installation of structures.
 2. Excavations for structures shall be carried to the lines and subgrades shown on the Drawings.
 3. Excavate areas large enough to provide suitable room for building the structures.

4. The extent of open excavation shall be controlled by prevailing conditions subject to any limits designated by the Engineer.
 5. Provide, install, and maintain sheeting and bracing as necessary to support the sides of the excavation and to prevent any movement of earth which could diminish the width of the excavation or otherwise injure the work, adjacent structures, or persons and property in accordance with all state and OSHA safety standards.
 6. Erect suitable fences around structure excavation and other dangerous locations created by the work, at no additional cost to the Owner.
 7. Exposed subgrade surfaces shall remain undisturbed, protected, and maintained as uniform, plane areas and shape to receive the foundation components of the structure.
 - a. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
 - b. In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade and trim bottoms to required lines and grades to leave solid base to receive the structure.
 - c. If a structure is to be constructed within the embankment, the fill shall first be brought to a minimum of 3 feet above the base of the footing. A suitable excavation shall then be made as though the fill were undisturbed earth.
- E. Trench Excavation: Shall consist of removal, hauling and disposal of all material encountered in the excavation to the widths and depths shown on the Drawings to permit proper installation of underground utilities.
1. Excavate trenches to the uniform width shown on the Drawings sufficiently wide to provide sufficient space for installation, backfilling, and compaction. Every effort should be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.
 2. Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one foot above the top of the pipe.
 3. Grade bottoms of trenches as indicated for pipe and bedding to establish the indicated slopes and invert elevations, notching under pipe joints to provide solid bearing for the entire body of the pipe, where applicable.
 4. If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least two feet above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.
 5. Unless otherwise specifically directed or permitted by the Engineer, begin excavation at the low end of sewer and storm lines and proceed upgrade.
 6. Perform excavation for force mains and water mains in a logical sequence.
 7. The extent of open excavation shall be controlled by prevailing conditions subject to any limits prescribed by the Engineer.

8. As the excavation progresses, install such shoring and bracing necessary to prevent caving and sliding and to meet the requirements of the state and OSHA safety standards, as outlined in the appropriate section of this Specification.
- F. Protection of Persons, Property and Utilities:
1. Barricade open excavations occurring as part of this work and post with warning lights in compliance with local and State regulations.
 2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures that may be required.
 3. Rules and regulations governing the respective utilities shall be observed in execution of all work. Active utilities and structures shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization of the utility owner. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable.
 4. Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Engineer, the utility, the property owner, and the Owner.
- G. Use of Explosives:
1. Do not bring explosives onto site or use in work without prior written permission from authorities having jurisdiction. Contractor is solely responsible for handling, storage, and use of explosive materials when their use is permitted.
 2. All blasting shall be performed in accordance with all pertinent provisions of the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, Inc.
- H. Stability of Excavations:
1. Slope sides of excavations to comply with all codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
 2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- I. Shoring and Bracing:
1. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.
 2. Provide trench shoring and bracing to comply with local codes and authorities having jurisdiction. Refer to Specification Section 02156.

3. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Install shoring and bracing as excavation progresses.
- J. Material Storage:
1. Stockpile excavated materials which are satisfactory for use on the work until required for backfill or fill. Place, grade and shape stockpiles for proper drainage and protect with temporary seeding or other acceptable methods to control erosion.
 2. Locate and retain soil materials away from edge of excavations.
 3. Dispose of excess soil material and waste materials as herein specified.
- K. Dewatering:
1. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) with which to intercept and/or remove promptly and dispose properly of all water entering trenches and other excavations (including surface and subsurface waters).
 2. Excavations shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged. Refer to Specification Section 02401.
- L. Cold Weather Protection:
1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F.
 2. No frozen material shall be used as backfill or fill and no backfill shall be placed on frozen material.
- M. Separation of Surface Material:
1. The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the work.
 2. Prior to excavation, existing pavement shall be cut where in the opinion of the Engineer it is necessary to prevent damage to the remaining road surface.
 3. Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.
 4. From areas within which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.
- N. Dust Control:
1. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, so as to minimize the creation and dispersion of dust. Refer to Specification Section 01562.
 2. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, the contractor shall furnish and spread the material, as directed.

3.3 BACKFILL AND FILL

A. General:

1. Backfilling shall consist of replacing material removed to permit installation of structures or utilities, as indicated in the Contract Documents.
2. Filling shall consist of placing material in areas to bring them up to grades indicated on the Drawings.
3. The Contractor shall provide and place all necessary backfill and fill material, in layers to the required grade elevations.
4. Backfill excavations as promptly as work permits, but not until completion of the following:
 - a. Acceptance by Engineer of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 - b. Inspection, approval, and recording locations of underground utilities.
 - c. Removal of concrete formwork.
 - d. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Temporary sheet piling driven below bottom of structures shall be removed in manner to prevent settlement of the structure or utilities, or cut off and left in place if required.
 - e. Removal of trash and debris.
 - f. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
 - g. Density testing having results meeting requirements specified herein.
5. In general, and unless otherwise indicated, material used for backfill of trenches and excavations around structures shall be suitable excavated material which was removed in the course of making the construction excavation. Unless otherwise specified or allowed by the Engineer the backfill and fill shall be placed in layers not to exceed 8 inches in thickness.
6. All fill and backfill under structures and pavement, and adjacent to structures, shall be compacted crushed stone or select fill as specified or as indicated on the Drawings. The fill and backfill materials shall be placed in layers not exceeding 8 inches in thickness.
7. All structures (including manholes) shall be placed on a 6-inch mat of screened stone unless otherwise indicated.
8. Suitable excavated material shall meet the following requirements:
 - a. Free from large clods, silt lumps or balls of clay.
 - b. Free from stones and rock fragments with larger than 12 inch max. dimension.
 - c. Free from organics, peat, etc.
 - d. Free from frozen material.
9. If sufficient suitable excavated material is not available from the excavations, and where indicated on the Drawings, the backfill material shall be select fill or common borrow, unless otherwise indicated, as required and as directed by the Engineer.
10. Do not backfill with, or on, frozen materials.

11. Remove, or otherwise treat as necessary, previously placed material that has frozen prior to placing backfill.
 12. Do not mechanically or hand compact material that is, in the opinion of the Engineer, too wet.
 13. Do not continue backfilling until the previously placed and new materials have dried sufficiently to permit proper compaction.
 14. The nature of the backfill materials will govern the methods best suited for their placement and compaction. Compaction methods and required percent compaction is covered in Compaction section.
 15. Before compaction, moisten or aerate each layer as necessary to provide a water content necessary to meet the required percentage of maximum dry density for each area classification specified.
 16. Do not allow large masses of backfill material to be dropped into the excavation in such a manner that may damage pipes and structures.
 17. Place material in a manner that will prevent stones and lumps from becoming nested.
 18. Completely fill all voids between stones with fine material.
 19. Do not place backfill on or against new concrete until it has attained sufficient strength to support loads without distortion, cracking, and other damage.
 20. Deposit backfill and fill material evenly on all sides of structures to avoid unequal soil pressures.
 21. Keep stones or rock fragments with a dimension greater than two inches at least one foot away from the pipe or structure during backfilling.
 22. Leave sheeting in place when damage is likely to result from its withdrawal.
 23. Completely fill voids left by the removal of sheeting with screened stone which is compacted thoroughly.
- B. Pipe Bedding, Initial Backfill and Trench Backfill
1. Place bedding and backfill in layers of uniform thickness specified herein, and as shown on the Drawings.
 2. Thoroughly compact each layer by means of a suitable vibrator or mechanical tamper.
 3. Install pipe bedding and initial backfill in layers of uniform thickness not greater than eight (8) inches.
 4. Deposit the remainder of the backfill in uniform layers not greater than eight inches.
 5. Provide underground sewer marking tape for the full length of sewer trenches as shown on the Drawings. Marking tape shall be SETON #210 SEW or equivalent.
 6. Where soft silt and clay soils are encountered the trench shall be excavated six inches below the normal bedding and backfilled with 6-inches of compacted sand.
 7. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below the bottom of such footings, or which pass under wall footings. Place concrete to the level of the bottom of adjacent footings.

8. The following schedule gives the bedding requirements for various types of pipe. Distances refer to vertical thickness below the pipe.

BEDDING REQUIREMENTS

DI or Concrete Pipe 6 inches min. screened stone or select fill.

PVC or PE Pipe 6 inches min. screened stone.

9. The following schedule gives the initial backfill requirements for various types of pipes.

INITIAL BACKFILL REQUIREMENTS

DI or Concrete,
Pipe Screened stone or select fill 6 inches min.
over top of pipe.

PVC or PE
Pipe 6 inches min. screened stone
over the top of the pipe.

10. Special bedding and backfill requirements shown on the Drawings supersede requirements of this section.
11. Where pipes or structures pass through or under the impervious core of the lagoon embankments, bedding and backfill material shall consist of the impervious embankment material. Extra care should be given to properly and thoroughly compact the bedding material around the pipe.
- C. Improper Backfill:
1. When excavation and trenches have been improperly backfilled, and when settlement occurs, reopen the excavation to the depth required, as directed by the Engineer.
 2. Refill and compact the excavation or trench with suitable material and restore the surface to the required grade and condition.
 3. Excavation, backfilling, and compacting work performed to correct improper backfilling shall be performed at no additional cost to the Owner.
- D. Ground Surface Preparation:
1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, scarify or break-up sloped surface steeper than 1 vertical to 4 horizontal.
 2. When existing ground surface has a density less than that specified under "compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

3.4 COMPACTION

A. General:

1. Control soil compaction during construction to provide not less than the minimum percentage of density specified for each area classification.

B. Percentage of Maximum Density Requirements:

1. Compact soil to not less than the following percentages of maximum dry density determined in accordance with ASTM D1557 as indicated.
 - a. Structures: Compact each layer of backfill or fill material below or adjacent to structures to at least 95% of maximum dry density (ASTM D1557).
 - b. Off Traveled Way Areas: Compact each layer of backfill or fill material to at least 90% of maximum dry density (ASTM D1557).
 - c. Walkways: Compact each layer of backfill or fill material to at least 93% of maximum dry density (ASTM D1557).
 - d. Roadways, Drives and Paved Areas: Compact each layer of fill, subbase material, and base material to at least 95% of maximum dry density (ASTM D1557).
 - e. Pipes: Compact bedding material and each layer of backfill to at least 90% maximum dry density (ASTM D1557). Where backfilling with excavated material, compact to native field density.
 - f. Embankments: Compact each layer of embankment material to at least 95% of maximum dry density (ASTM D1557).

C. Moisture Control:

1. Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, in quantities controlled to prevent free water appearing on surface during or subsequent to compaction operations.
2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory level.

D. Embankment Compaction:

1. After each embankment layer has been spread to the required maximum 8-inch thickness and its moisture content has been adjusted as necessary, it shall be rolled with a sufficient number of passes to obtain the required compaction. One pass is defined as the required number of successive trips which by means of sufficient overlap will insure complete coverage and uniform compaction of an entire lift. Additional passes shall not be made until the previous pass has been completed.
2. When any section of an embankment sinks or weaves excessively under the roller or under hauling units and other equipment, it will be evident that the required degree of compaction is not being obtained and that a reduction in the moisture content is required. If at any place or time such sinking and weaving produces surface cracks which, in the judgment of the Engineer are of such

character, amount, or extent to indicate an unfavorable condition, he will recommend operations on that part of the embankment to be suspended until such time as it shall have become sufficiently stabilized. The ideal condition of the embankment is that attained when the entire embankment below the surface being rolled is so firm and hard as to show only the slightest weaving and deflection as the roller passes.

3. If the moisture content is insufficient to obtain the required compaction, the rolling shall not proceed except with the written approval of the Engineer, and in that event, additional rolling shall be done to obtain the required compaction. If the moisture content is greater than the limit specified, the material of such water content may be removed and stockpiled for later use or the rolling shall be delayed until such time as the material has dried sufficiently so that the moisture content is within the specified limits. No adjustment in price will be made on account of any operation of the Contractor in removing and stockpiling, or in drying the materials or on account of delays occasioned thereby.
 4. If because of insufficient overlap, too much or too little water, or other cause attributable to defective work, the compaction obtained over any area is less than that required, the condition shall be remedied, and if additional rollings are ordered, they will be done at no cost to the Owner. If the material itself is unsatisfactory or if additional rolling or other means fails to produce satisfactory results, the area in question shall be removed down to material of satisfactory density and the removal, replacement, and re-rolling shall be done by the Contractor, without additional compensation.
 5. Material compaction by hand-operated equipment or power-driven tampers shall be spread in layers not more than 6 inches thick. The degree of compaction obtained by these tamping operations shall be equal in every respect to that secured by the rolling operation.
- E. Compaction Methods: The Contractor may select any method of compaction that is suitable to compact the material to the required density.
1. General: Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material. All voids left by the removal of sheeting shall be completely backfilled with suitable materials and thoroughly compacted.
 2. Tamping or Rolling: If the material is to be compacted by tamping or rolling, the material shall be deposited and spread in uniform, parallel layers not exceeding the uncompacted thicknesses specified. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. Care shall be taken that the material close to the excavation side slopes, as well as in all other portions of the fill area, is thoroughly compacted. When the excavation width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe or structure, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping or rolling, the

rate at which backfilling material is deposited shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.

- F. **Reconditioning Compacted Areas:** Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.5 GRADING

A. **General:**

1. Grading shall consist of that work necessary to bring all areas to the final grades.
2. Uniformly grade areas within limits of work requiring grading, including adjacent transition areas.
3. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

B. **Grading Outside Building Lines:**

1. Grade areas adjacent to building to drain away from structures and to prevent ponding.
2. Grade surfaces to be free from irregular surface changes, and as follows:
 - a. **Lawn or Unpaved Areas:** Finish grade areas to receive topsoil to within not more than 1" above or below the required subgrade elevations.
 - b. **Walks:** Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/2" above or below the required subgrade elevation.
 - c. **Pavements:** Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 3/8" above or below the required subgrade elevation.

C. **Grading Surface of Fill Under Building Slabs:**

1. Grade surface to be smooth and even, free of voids, and compacted as specified, to the required elevation.
2. Provide final grades within a tolerance of 1/2" when tested with a 10' straight edge.

D. **Compaction:**

1. After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

E. **Protection of Graded Areas:**

1. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
2. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

3.6 BASE COURSE AND LEVELING COURSE

A. **General:**

1. Base course consists of placing the specified materials in layers to support a leveling course or paved surface, as indicated in the Drawings.

- B. Grade Control:
 - 1. During construction, maintain lines and grades including crown and cross-slope of base course and leveling course.
- C. Placing:
 - 1. Place base course on prepared subbase conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting base materials.
 - 2. Place leveling course on prepared base course, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compaction.
- D. Shaping and Compacting:
 - 1. All layers of aggregate base course and leveling course shall be compacted to the required density immediately after placing. As soon as the compaction of any layer has been completed, the next layer shall be placed.
 - 2. The Contractor shall bear full responsibility for and make all necessary repairs to the base leveling courses and the subgrade until the full depth of the base leveling courses is placed and compacted. Repairs shall be made at no additional cost to the Owner.
 - 3. If the top of any layer of the aggregate base or leveling course becomes contaminated by degradation of the aggregate or addition of foreign materials, the contaminated material shall be removed and replaced with the specified material at the Contractor's expense.

END OF SECTION

SECTION 02270TEMPORARY EROSION CONTROLPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. The work under this section shall include provision of all labor, equipment, materials and maintenance of temporary erosion control devices, as specified herein, as shown on the Drawings and as directed by the Engineer.
2. Erosion control measures shall be provided as necessary to correct conditions that develop prior to the completion of permanent erosion control devices, or as required to control erosion that occurs during normal construction operations.
3. Construction operations shall comply with all federal, state and local regulations pertaining to erosion control.
4. After awarding of or after being awarded the Contract, prior to commencement of construction activities, the Contractor will meet with the Engineer to discuss erosion control requirements and develop a mutual understanding relative to details of erosion control.

B. Related Work Specified Elsewhere:

1. Site work is specified in appropriate sections of this Division.

C. Design Criteria:

1. Conduct all construction in a manner and sequence that causes the least practical disturbance of the physical environment.
2. Stabilize disturbed earth surfaces in the shortest time and employ such temporary erosion control devices, as may be necessary, until such time as adequate soil stabilization has been achieved.

1.2 SUBMITTALS

- A. The Contractor shall furnish the Engineer, in writing, his work plan giving proposed locations for storage of topsoil and excavated material, before beginning construction. A schedule of work shall accompany the work plan. Acceptance of this plan will not relieve the Contractor of his responsibility for completion of the work as specified.

PART 2 - PRODUCTS2.1 MATERIALS

A. Baled Hay:

1. At least 14" by 18" by 30" securely tied to form a firm bale, staked as necessary to hold the bale in place.

B. Sand Bags:

1. Heavy cloth bags of approximately one cubic foot capacity filled with sand or gravel.
- C. Mulches:
 1. Loose hay, straw, peat moss, wood chips, bark mulch, crushed stone, wood excelsior, or wood fiber cellulose.
 2. Type and use shall be as specified by the "Maine Erosion and Sedimentation Control Handbook for Construction - Best Management Practices" prepared by the Maine DEP and the Soil and Water Conservation Commission herein after referred to as the BMP.
- D. Mats and Nettings:
 1. Twisted Craft paper, yarn, jute, excelsior wood fiber mats, glass fiber and plastic film.
 2. Type and use shall be as specified in the BMP.
- E. Permanent Seed:
 1. Conservation mix appropriate to the predominant soil conditions as specified in the BMP and subject to approval by the Engineer.
- F. Temporary Seeding:
 1. Use species appropriate for soil conditions and season as specified in the BMP and subject to approval by the Engineer.
- G. Water:
 1. The Contractor shall provide water and equipment to control dust, as directed by the Engineer.
- H. Filter Fabrics:
 1. Filter fabric shall be of one of the commercially available brands such as Mirafi, Typar or equivalent. Fabric types for particular applications shall be approved by the Engineer prior to installation.

2.2 CONSTRUCTION REQUIREMENTS

- A. Temporary Erosion Checks:
 1. Temporary erosion checks shall be constructed in ditches and other locations as necessary.
 2. Baled hay, sand bags or siltation fence may be used in an arrangement to fit local conditions.
- B. Temporary Berms:
 1. Temporary barriers shall be constructed along the toe of embankments when necessary to prevent erosion and sedimentation.
- C. Temporary Seeding:

Areas to remain exposed for a time exceeding 3 weeks shall receive temporary seeding as indicated below:

<u>Season</u>	<u>Seed</u>	<u>Rate</u>
Summer (5/15 - 8/15)	Sudangrass	40 lbs/acre
Late Summer/Early Fall	Oats	80 lbs/acre

(8/15 - 9/15)	Annual Ryegrass	40 lbs/acre
Fall (9/15 - 10/1)	Winter Rye	112 lbs/acre
Winter (10/1 - 4/1)	Mulch w/Dormant Seed	80 lbs/acre*
Spring (4/1 - 7/1)	Oats	80 lbs/acre
	Annual Ryegrass	40 lbs/acre

* seed rate only

- D. Siltation fences shall consist of porous filter fabric with a wire mesh backing and shall be supported by posts as per manufacturer's recommendations. Fabric shall be approved by the Engineer.
- E. Mulch All Areas Receiving Seeding:
Use either wood cellulose fiber mulch (750 lbs/acre); or straw mulch with chemical tack (as per manufacturer's specifications). Wetting for small areas may be permitted. Biodegradable netting is recommended in areas to be exposed to drainage flow.
- F. Erosion control matting for slopes and ditches shall be anchored with pegs and/or staples per manufacturer's recommendations. Contractor shall provide matting along the flowline of all ditches and swales having a longitudinal slope in excess of 0.01 ft/ft, and on all slopes in excess of 3(H) to 1(V).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Temporary Erosion Checks:
 - 1. Temporary erosion checks shall be constructed in ditches and at other locations designated by the Engineer. The Engineer may modify the Contractor's arrangement of silt fences, bales and bags to fit local conditions.
 - 2. Baled hay, silt fences, or sandbags, or some combination, may be used in other areas, as necessary, to inhibit soil erosion.
 - 3. Siltation fence, if called for in the plans, shall be located and installed as shown.
 - 4. Sedimentation ponds shall be sited and constructed to the grades and dimensions as shown on the Drawings and will include drainage pipe and an emergency spillway.
- B. Erosion control matting for slopes and ditches shall be installed where indicated on the Drawings and as required to stabilize the soil until permanent vegetative stabilization is established.
- C. Maintenance:
Erosion control features shall be installed prior to excavation wherever appropriate. Temporary erosion control features shall remain in place and shall be maintained until a satisfactory growth of grass is established. The Contractor shall be responsible for maintaining erosion control features throughout the life of the construction contract. Maintenance will include periodic inspections by the Owner or Engineer for effectiveness of location, installation and condition with corrective action taken by the Contractor, as appropriate.

D. Removing and Disposing of Materials:

1. When no longer needed, material and devices for temporary erosion control shall be removed and disposed of upon approval by Engineer.
2. When removed, such devices may be reused in other locations, provided they are in good condition and suitable to perform the erosion control for which they are intended.
3. When dispersed over adjacent areas, the material shall be scattered to the extent that it causes no unsightly conditions nor creates future maintenance problems.
4. Sedimentation basins, if no longer required, will be filled in, the pipe removed, the surface loamed and grass cover shall be established.

END OF SECTION

SECTION 02401DEWATERINGPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Furnish, operate and maintain, as incidental to the project, dewatering equipment for the control, collection and disposal of ground and surface water where necessary to complete the work.

B. Related Work Specified Elsewhere: (When Applicable)

1. Earthwork and Sheet piling are specified in the appropriate section in this division.

1.2 SUBMITTALS

A. Provide submittals in accordance with Specification Section 01340.

- B. Submit design calculations, description and complete layout drawings of the proposed dewatering system, stamped and sealed by a Professional Engineer registered in the State of Maine. Such review shall not relieve the Contractor of sole responsibility for the dewatering system as necessary to prevent damage to adjacent structures, utilities, streets adjacent to excavations and for the safety of persons working within the excavated areas.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION3.1 PERFORMANCE

A. General:

1. Keep work areas dewatered until the structures, pipes, and appurtenances to be built there have been completed to such an extent that they will not be damaged by water.
2. Thoroughly brace or otherwise protect against flotation all pipelines and structures which are not stable.
3. Maintain standby backup equipment and power supply throughout the duration of the dewatering operation.
4. Prevent soil particles from entering the discharge points.
5. Ground water level shall be maintained at least one foot below the bottom of the excavation.

- B. Disposal of Water:
1. Dispose of water pumped or drained from the construction site in a suitable manner to avoid siltation of adjacent drainage structures and piping, wetlands or water bodies, injury to public health, damage to public and private property, and damage to the work completed or in progress.
 2. Provide suitable temporary channels for water that may flow along or across the construction site.
 3. Provide treatment as necessary to prevent discharge of contaminated ground water caused by Contractor's operations, or any contaminated ground water that may pass through the excavation support system selected by the Contractor.
 4. Contractor must obtain all necessary regulatory approvals for the disposal of dewatering flows. These may include, among others, approval by the USEPA under the National Pollutant Discharge Elimination System (NPDES) program for construction activities or Maine discharge permit.
- C. Damage:
1. Avoid damage to adjacent buildings, roads, structures, utilities and other facilities.
 2. Any damage resulting from the dewatering operations, or the failure of the Contractor to maintain the work in a suitably dry condition shall be repaired by the Contractor at no additional cost to the Owner.
- D. Temporary Underdrains:
1. When necessary, temporary underdrains may be placed in excavations.
 2. Underdrain pipe shall be perforated corrugated metal, polyethylene or P.V.C. pipe.
 3. Entirely surround the underdrain and fill the space between the underdrain and the pipe or structure with free draining material.
- E. Excavation Sump Pumping:
1. When necessary and where appropriate to the geotechnical conditions encountered, excavations may be over excavated 6 to 12 inches and filled with screened stone to allow sump pumping of groundwater.
 2. The system shall be installed with suitable screens and filters so that pumping of fines does not occur.
- F. Well and Wellpoint System:
1. If necessary, dewater the excavations and trenches with an efficient well or wellpoint system to drain the soil and prevent saturated soil from flowing into the excavated wells and area.
 2. Wellpoint and well system shall be of the type designed for dewatering work and shall be installed with suitable screens and filters so that pumping of fines does not occur.
 3. Pumping units shall be capable of maintaining sufficient suction to handle large volumes of air and water at the same time.

END OF SECTION

SECTION 02485LOAMING & SEEDINGPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish, place, and test topsoil, seed, lime, and fertilizer where shown on the drawings and protect and maintain seeded areas disturbed by construction work, as directed by the Engineer.
- B. Related Work Specified Elsewhere (When Applicable): Earthwork, excavation, backfill, compaction, site grading and temporary erosion control are specified in the appropriate Sections of this Division.

1.2 SUBMITTALS AND TESTING

A. Seed:

- 1. Furnish the Engineer with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered to the project site is fully labeled in accordance with the Federal Seed Act and is at least equal to the specification requirements.
- 2. This certification shall appear in, or with, all copies of invoices for the seed.
- 3. The certification shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates and certificates have been approved.
- 4. Each lot of seed shall be subject to sampling and testing, at the discretion of the Engineer, in accordance with the latest rules and regulations under the Federal Seed Act.

B. Topsoil:

- 1. Inform the Engineer, within 30 days after the award of the Contract, of the sources from which the topsoil is to be furnished.
- 2. Obtain representative soil samples, taken from several locations in the area under consideration for topsoil removal, to the full stripping depth.
- 3. Have soil samples tested by an independent soils testing laboratory, approved by the Engineer, at the Contractor's expense.
- 4. Have soil samples tested for physical properties and pH (or lime requirement), for organic matter, available phosphoric acid, and available potash, in accordance with standard practices of soil testing.
- 5. Approval, by the Engineer, to use topsoil for the work will be dependent upon the results of the soils tests.

C. Lime & Fertilizer:

- 1. Furnish the Engineer with duplicate copies of invoices for all lime and fertilizer used on the project showing the total minimum carbonates and minimum percentages of the material furnished that pass the 90 and 20 mesh sieves and the grade furnished.

2. Each lot of lime and fertilizer shall be subject to sampling and testing at the discretion of the Engineer.
3. Sampling and testing shall be in accordance with the official methods of the Association of Official Agricultural Chemists.
4. Upon completion of the project, a final check may be made comparing the total quantities of fertilizer and lime used to the total area seeded. If the minimum rates of application have not been met, the Engineer may require the Contractor to distribute additional quantities of these materials to meet the minimum rates.

1.3 DELIVERY, STORAGE & HANDLING

A. Seed:

1. Furnish all seed in sealed standard containers, unless exception is granted in writing by the Engineer.
2. Containers shall be labeled in accordance with the United States Department of Agriculture's rules and regulations under the Federal Seed Act in effect at the time of purchase.

B. Fertilizer:

1. Furnish all fertilizer in unopened original containers.
2. Containers shall be labeled with the manufacturer's statement of analysis.

1.4 JOB CONDITIONS

A. Topsoil: Do not place or spread topsoil when the subgrade is frozen, excessively wet or dry, or in any condition otherwise detrimental, in the opinion of the Engineer, to the proposed planting or to proper grading.

B. Seeding:

1. Planting Seasons: The recommended seeding time is from April 1 to September 15. The Contractor may seed at other times. Regardless of the time of seeding, the Contractor shall be responsible for each seeded area until it is accepted.
2. Weather Conditions:
 - a. Do not perform seeding work when weather conditions are such that beneficial results are not likely to be obtained, such as drought, excessive moisture, or high winds.
 - b. Stop the seeding work when, in the opinion of the Engineer, weather conditions are not favorable.
 - c. Resume the work only when, in the opinion of the Engineer, conditions become favorable, or when approved alternate or corrective measures and procedures are placed into effect.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Seed:

1. Provide the grass seed mixture approved by the Engineer, having the following composition:
 - a. Park Mixture:
 - 50 percent Creeping Red Fesque
 - 30 percent Kentucky Bluegrass
 - 20 percent Annual Ryegrass
 - b. Roadside Mixture:
 - 50 percent Creeping Red Fescue
 - 15 percent Kentucky Bluegrass
 - 5 percent White Clover
 - 2 percent Red Top
 - 3 percent Birdsfoot Trefoil
 - 25 percent Annual Ryegrass
2. Do not use seed which has become wet, moldy, or otherwise damaged in transit or during storage.

B. Topsoil:

1. Provide the quantity of topsoil necessary, in the opinion of the Engineer, to complete the work.
2. Provide topsoil that is natural, friable clay-loam soil possessing the characteristics of representative soils in the vicinity which produce heavy growths of crops, grass, or other vegetation.
3. Provide topsoil which is reasonably free from subsoil, brush, objectionable weeds, other litter, clay lumps, stones, stumps, roots, objects larger than 2 inches in diameter, and toxic substances which might be harmful to plant growth or be a hindrance to grading, planting, and maintenance operations.
4. Obtain topsoil from naturally well drained areas.

C. Lime:

1. Provide lime which is ground limestone containing not less than 85% of total carbonate and of such fineness that 90% will pass a No. 20 sieve and 50% will pass a No. 100 sieve.
2. Coarser materials will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing a No. 100 sieve. No additional payment will be made to the Contractor for the increased quantity.

D. Fertilizer:

1. Provide a commercial fertilizer approved by the Engineer.
2. Provide fertilizer containing the following minimum percentage of nutrients by weight:
 - 10% Available phosphoric acid
 - 10% Available potash

10% Available nitrogen (75% of the nitrogen shall be organic)

PART 3 - EXECUTION

3.1 PREPARATION

A. Equipment:

1. Provide all equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials.
2. Demonstrate to the Engineer that the equipment will apply materials at the specified rates.

B. Soil: Perform the following work prior to the application of lime, fertilizer or seed.

1. Scarify the subgrade to a depth of 2 inches to allow the bonding of the topsoil with the subsoil.
2. Apply topsoil to a depth of 4 inches or as directed on areas to be seeded.
3. Trim and rake the topsoil to true grades free from unsightly variations, humps, ridges or depressions.
4. Remove all objectionable material and form a finely pulverized seed bed.

3.2 PERFORMANCE

A. Grading:

1. Grade the areas to be seeded as shown on the Drawings or as directed by the Engineer.
2. Leave all surfaces in even and properly compacted condition.
3. Maintain grades on the areas to be seeded in true and even conditions, including any necessary repairs to previously graded areas.

B. Placing Topsoil:

1. Uniformly distribute and evenly spread topsoil on the designated areas.
2. Spread the topsoil in such a manner that planting work can be performed with little additional soil preparation or tillage.
3. Correct any irregularities in the surface resulting from topsoiling or other operations to prevent the formation of depressions where water may stand.
4. Thoroughly till the topsoil to a depth of at least 3 inches by plowing, discing, harrowing, or other approved method until the condition of the soil is acceptable to the Engineer.

C. Placing Fertilizer:

1. Distribute fertilizer uniformly at a rate determined by the soils test over the areas to be seeded.
2. Incorporate fertilizer into the soil to a depth of at least 3 inches by discing, harrowing, or other methods acceptable to the Engineer.
3. The incorporation of fertilizer may be a part of the tillage operation specified above.
4. Distribution by means of an approved seed drill equipped to sow seed and distribute fertilizer at the same time will be acceptable.

D. Placing Lime:

1. Uniformly distribute lime immediately following or simultaneously with the incorporation of fertilizer.
2. Distribute lime at a rate determined from the pH test, to a depth of at least 3 inches by discing, harrowing, or other methods acceptable to the Engineer.

E. Seeding:

1. Level out any undulations or irregularities in the surface resulting from tillage, fertilizing, liming or other operations before starting seeding operations.
2. Hydroseeding:
 - a. Hydroseeding may be performed where approved and with equipment approved by the Engineer.
 - b. Sow the seed over designated areas at a minimum rate of 5 pounds per 1000 square feet.
 - c. Seed and fertilizing materials shall be kept thoroughly agitated in order to maintain a uniform suspension within the tank of the hydroseeder.
 - d. The spraying equipment must be designed and operated to distribute seed and fertilizing materials evenly and uniformly on the designated areas at the required rates.
3. Drill Seeding:
 - a. Drill seeding may be performed with approved equipment having drills not more than 2 inches apart.
 - b. Sow the seed uniformly over the designated areas to a depth of 1/2 inch and at a rate of 5 pounds per 1,000 square feet.
4. Broadcast Seeding:
 - a. Broadcast seeding may be performed by equipment approved by the Engineer.
 - b. Sow the seed uniformly over the designated areas at a rate of 5 pounds per 1,000 square feet.
 - c. Sow half the seed with the equipment moving in one direction and the remainder of the seed with the equipment moving at right angles to the first sowing.
 - d. Cover the seed to an average depth of 1/2 inch by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved devices.
 - e. Do not perform broadcast seeding work during windy weather.

F. Compacting:

1. Seeded areas must be raked lightly after sowing unless seeding is to be directly followed by application of an approved mulch.
2. Compact the entire area immediately after the seeding operations have been completed.
3. Compact by means of a cultipacker, roller, or other equipment approved by the Engineer weighing 60 to 90 pounds per linear foot of roller.

4. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, use a pneumatic roller (not wobbly wheel) that has tires of sufficient size to obtain complete coverage of the soil.
5. When using a cultipacker or similar equipment, perform the final rolling at right angles to the prevailing slopes to prevent water erosion, or at right angles to the prevailing wind to prevent dust.

3.3 PROTECTION & MAINTENANCE

A. Protection:

1. Protect the seeded area against traffic or other use.
2. Erect barricades and place warning signs as needed.

B. Maintenance:

1. At the time of the first cutting, set mower blades two inches high. All lawns shall receive at least two mowings before acceptance. Coordinate schedule for mowing with Engineer.
2. Maintenance shall also include all temporary protection fences, barriers and signs and all other work incidental to proper maintenance.
3. Maintain grass areas until a full stand of grass is indicated, which will be a minimum of 45 days after all seeding work is completed, and shall not necessarily related to Substantial Completion of the General Contract.
4. Protection and maintenance of grass areas shall consist of watering, weeding, cutting, repair of any erosion and reseeded as necessary to establish a uniform stand for the specified grasses, and shall continue until Acceptance by the Engineer of the work of this section. It shall also include the furnishing and applying of such pesticides as are necessary to keep grass areas free of insects and disease. All pesticides shall be approved by Engineer prior to use.

3.4 ACCEPTANCE

- A. At final acceptance of the project all areas shall have a close stand of grass with no weeds present and no bare spots greater than three inches (3") in diameter over greater than five percent (5%) of the overall seeded area.

END OF SECTION

SECTION 02601MANHOLES, COVERS AND FRAMESPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Construct manholes, covers, frames, brick masonry, inverts and apply waterproofing in conformance with the dimensions, elevations, and locations shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere (when applicable):
 - 1. Final sewer testing is specified in this Division.
 - 2. Pipe, excavation, backfill, paving and dewatering are specified in the appropriate Sections in this Division.
 - 3. Concrete and grout are specified in Division 3.

1.2 QUALITY ASSURANCE

- A. Precast Manhole Base, Barrel and Top Sections:
 - 1. Conform to ASTM C478-97 except as modified herein, and on the Drawings.
 - 2. Average strength of 4,000 psi at 28 days.
 - 3. Testing:
 - a. Determine concrete strength by tests on 6-inch by 12-inch vibrated test cylinders cured in the same manner as the bases, barrels and tops.
 - b. Have tests conducted at the manufacturer's plant or at a testing laboratory approved by the Engineer.
 - c. Have not less than 2 tests made for each 100 vertical feet of precast manhole sections.
- B. Manhole Steps
 - 1. Acceptable Manufacturers:
 - a. Aluminum Company of America.
 - b. Reliance Steel Products, Inc.
 - c. M. A. Industries, Inc.
 - d. Or equivalent.
- C. Frames and Covers:
 - 1. Acceptable Manufacturers:
 - a. Etheridge Foundry Co.
 - b. Neenah Foundry Co.
 - c. E. L. LeBaron Foundry Company.
 - d. Or equivalent.
- D. Masonry:
 - 1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick.
 - 2. Cement: ASTM C-150.

3. Hydrated Lime: ASTM C-207
4. Sand: ASTM C33
- E. Waterproofing:
 1. Acceptable Manufacturers:
 - a. Minwax Fibrous Brush Coat, Minwax Co., N.Y., N.Y.
 - b. Tremco 121 Foundation Coating, Tremco Mfg. Co., Newark, N.J.
 - c. Or approved equal.

1.3 SUBMITTALS TO THE ARCHITECT/ENGINEER

- A. Submit shop drawings and manufacturer's literature in conformance with Section 01340 and the Standard General Conditions of the Construction Contract.
- B. Precast Manhole Sections: Submit test results and receive approval from the Engineer prior to delivery to the site.

PART 2 - PRODUCTS

2.1 PRECAST MANHOLE SECTIONS

- A. Dimensions, shall be as shown on the Drawings:
 1. Base & Riser Sections:
 - a. Diameter: As shown on the Drawings.
 - b. Length: As required.
 - c. Wall Thickness: Not less than 5 inches.
 - d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to insure accurate joint surfaces.
 2. Tops:
 - a. Diameter: Eccentric cone type, 24 inches I.D. at top, 48 inches I.D. at bottom unless otherwise shown on the Drawings.
 - b. Length: 4 feet.
 - c. Wall thickness: Not less than 5 inches at the base, tapering to not less than 8 inches at the top.
 - d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to insure accurate joint surfaces.
 - e. Exterior face of cone sections shall not flare out beyond the vertical.
 3. Flat Slab Tops:
 - a. Location: Where shallow installations do not permit the use of a cone-type top and where indicated on the Drawings.
 - b. Slab thickness: Not less than 6 inches.
 - c. Constructed to support an HS-20 wheel loading.
- B. Openings:
 1. Provide openings in the risers to receive pipes entering the manhole.
 2. Make openings at the manufacturing plant.
 3. Size: To provide a uniform annular space between the outside wall of pipe and riser.
 4. Location: To permit setting of the entering pipes at the correct elevations.

5. Openings shall have a flexible watertight union between pipe and the manhole base.
 - a. Cast into the manhole base and sized to the type of pipe being used.
 - b. Type of flexible joint being used shall be approved by the Engineer. Install materials according to the Manufacturer's instructions.
 1. Lock Joint Flexible Manhole Sleeve made by Interpace Corporation.
 2. Kor N Seal made by National Pollution Control System, Inc.
 3. Press Wedge II made by Press-Seal Gasket Corporation.
 4. A-Lok Manhole Pipe Seal made by A-Loc Corporation.
 5. Or equivalent.
- C. Joints:
 1. Joint gaskets to be flexible self seating butyl rubber joint sealant installed according to manufacturer's recommendations. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer.
Acceptable Materials:
 - a. Kent-Seal No. 2
 - b. Ram-Nek
 - c. Or equivalent.
 2. Joints between precast sections shall conform to related standards and manufacturer's instructions.
 3. All manholes greater than 6 ft. diameter and all manholes used as wet wells, valve pits and other dry-pit type structures shall be installed with exterior joint collars. The joint collar shall be installed according to the manufacturer's instructions. Acceptable materials:
 - a. MacWrap exterior joint sealer as manufactured by Mar-Mac Manufacturing Company.
 - b. Or equivalent.
- D. Waterproofing:
 1. The exterior surface of all manholes shall be given two coats of bituminous waterproofing material at a application rate of 75 to 100 square feet per gallon, per coat.
 2. The coating shall be applied after the manholes have cured adequately and can be applied by brush or spray in accordance with the manufacturer's written instruction.
 3. Sufficient time shall be allowed between coats to permit sufficient drying so that the application of the second coat has no effect on the first coat.
- E. Frost Protective Wrapping:
 1. The frost protective wrap shall be constructed of an ultraviolet resistant polyethylene material and shall be a minimum thickness of 6 mils.

2.2 FRAMES AND COVERS

- A. Standard Units:
 1. Made of cast iron conforming to ASTM A48-76, Class 30 minimum.
 2. Have machined bearing surfaces to prevent rocking.

3. Castings shall be smooth with no sharp edges.
 4. Constructed to support an HS-20 wheel loading.
 5. Dimensions and Style shall conform to the Drawings, Standard castings differing in non-essential details are subject to approval by the Engineer:
 - a. Covers - solid with sewer in 3-inch letters diamond pattern.
 - b. Frame - 24-inch diameter clear opening, with flange bracing ribs.
 6. Minimum weight of frame and cover shall be 430 lbs.
- B. Water Tight Units:
1. Same features as above for Standard Units, with 22-inch diameter minimum clear opening.
 2. Sealing features:
 - a. Inner lid held by a bronze tightening bolt in a locking bar.
 - b. Neoprene gasket
 - c. Water tight pick hole.
 3. Minimum weight of frame and cover shall be 510 lbs.

2.3 MANHOLE STEPS

- A. Aluminum or polyethylene coated steel safety type designed with a minimum concentrated live load of 300 pounds.
- B. Thoroughly clean all surfaces to be embedded with a suitable cleaning agent to ensure that the surfaces are free from all foreign matter such as dirt, oil and grease.
- C. Aluminum surfaces to be embedded shall be given a protective coating of an approved heavy-bodied bituminous material. The steps shall become thoroughly dry before being placed into the concrete.
- D. All steps shall be cast into walls of the precast section so as to form a continuous ladder with a distance of 12-inches between steps.

2.4 MASONRY

- A. Brick:
 1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.
 2. Immediately remove rejected brick from the work.
- B. Mortar:
 1. Composition (by volume):
 - a. 1 part portland cement.
 - b. 1/2 part hydrated lime.
 - c. 4-1/2 parts sand.
 2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed 3 times the sum of the volume of cement and lime.
- C. Cement shall be Type II portland cement.
- D. Hydrated lime shall be Type S.
- E. Sand:
 1. Shall consist of inert natural sand.

2. Grading:

<u>Sieve</u>	<u>Percent Passing</u>
3/8-inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 50	10-30
No. 100	2-10
Fineness Modulus	2.3 - 3.1

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Precast Manhole Sections:

1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.
2. Install riser sections and tops level and plumb.
3. Make all joints watertight.
4. When necessary, cut openings carefully to prevent damage to barrel sections and tops. Replace damaged manhole sections and tops at no additional cost to the Owner.
5. When manhole steps are included in the Work, install barrel sections and tops so that steps are in alignment.

B. Drop Manholes:

1. The difference in elevation between the invert of the inlet pipe to the invert of the outlet pipe shall not exceed 24 inches without use of a drop structure.
2. Where difference in elevation exceeds 24 inches, construct a drop manhole as shown on the Drawings or as directed by the Engineer.

C. Adjust to Grade:

1. Adjust tops of manholes to grade with brick masonry.
2. Concrete rings are not acceptable for adjusting to grade.

D. Pipe Connections to Manholes: Connect pipes to manholes with joint design and materials approved by the Engineer.

E. Invert Channels:

1. Smooth and semicircular in shape conforming to the inside of the adjacent sewer section.
2. Make changes in direction of flow with smooth curves having a radius as large as permitted by the size of the manhole.
3. Stop the pipes at the inside face of the manhole where changes of direction occur.
4. Form invert channels with brick.
5. Shape invert to make smooth transition in vertical grade.
6. Slope the floor of the manhole to the flow channel, as shown on the Drawings.

F. Masonry:

1. Laying Brick:

- a. Use only clean bricks in brickwork for manholes.
- b. Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.
- c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.
- d. Construct all joints in a neat workmanlike manner. Construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.
- e. Outside faces of brick masonry shall be plastered with mortar from 1/4-inch to 3/8-inch thick.
- f. Completed brickwork shall be watertight.

2. Curing:

- a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.
- b. Protect brick masonry from the weather and frost as required.

G. Frames and Covers:

1. Set all frames in a full bed of mortar, true to grade and concentric with the manhole opening.
2. Completely fill all voids beneath the bottom flange to make a watertight fit.
3. Place a ring of mortar at least one inch thick around the outside of the bottom flange, extending to the outer edge of the manhole all around its circumference.
4. Clean the frame seats before setting the covers in place.

H. Plugging and Patching:

1. Fill all exterior cavities with non-shrink grout and with bituminous waterproofing once the concrete and mortar has set.
2. Touch up damaged water proofing.

I. Cleaning:

1. Thoroughly clean manholes, steps, frames and covers of all debris and foreign matter.

J. Bedding and Backfilling:

1. Bedding of manholes shall be 6 inches of 3/4" screened stone.
2. Backfill a minimum of 18 inches all around manhole with gravel borrow.

K. Frost Protective Wrap:

1. The Contractor shall comply with the manufacturer's instructions for the particular conditions of installations in each case.
2. Clean each manhole exterior of all dirt and remove any sharp protrusions.
3. Apply two (2) 6-inch wide vertical strips of bituminous waterproofing material and/or duct tape from the top to bottom of the manhole per layer.

4. Prior to installing pipe through each manhole or valve pit, wrap each manhole to the maximum depth of frost penetration, but not less than 5 feet below grade, with four (4) layers of the polyethylene material by beginning the wrap at the adhesive strip and proceeding around the manhole, valve pit, etc., continuously by overlapping the adhesive strip by 24 inches on the final layer. Cut the polyethylene wrap in areas where piping exits the manhole. The size of the cut is to be equivalent to the pipe's outside diameter.
5. Tuck and pleat the polyethylene wrap at the top of each manhole in a continuous manner, minimizing the size of each fold. Extend the polyethylene wrap past the top of the manhole frame and temporarily tuck the remainder inside the frame, until final backfill and paving.
6. In paved areas, cut the polyethylene wrap flush with the manhole rim after the pavement is in place.
7. In unpaved areas, pull the polyethylene wrap together, and tie around frame with galvanized wire.
8. Protect the installed frost barrier from harmful weather exposures and from possible physical abuses, where possible by prompt installation of concealing work or, where that is not possible, by temporary covering or enclosure.
9. Backfill around the manhole/frost barrier with material as outlined in Section 02200 - Earthwork.

3.2 MANHOLE TESTING

A. General:

1. Perform either a vacuum test or a combination of the exfiltration and infiltration tests on all manholes.
2. All testing must be performed in the presence of the Engineer.
3. Suitably plug all pipes entering each manhole and brace plugs to prevent blow out.

B. Exfiltration Tests After Backfilling:

1. Fill each manhole with water to the top of the manhole frame.
2. A period of up to 2 hours may be permitted, if the Contractor so wishes, to allow for absorption.
3. At the end of the absorption period, refill each manhole with water to the top of the manhole frame and begin the 4-hour test period.
4. At the end of the 4-hour test period, refill each manhole to the top of the manhole frame and measure the volume of water added. The leakage for each manhole shall not exceed 1/16 gallon per foot of diameter per vertical foot (above ground water) per 4-hour period.

C. Infiltration Tests:

1. When the groundwater is above the bottom of the manhole, infiltration testing may be performed on that portion of the manhole below water level.
2. After a 15-minute period, if no water is visibly moving down the interior surfaces of a manhole, the portion of the manhole below groundwater may be considered to be satisfactorily watertight.

3. The remaining portion above the groundwater level must be tested for exfiltration as specified above.
- D. Vacuum Test:
1. The manhole shall be tested by a vacuum test after assembly of the manhole, connection piping and backfilling.
 2. Plug all lifting holes completely with non-shrink grout.
 3. Properly tighten all boot clamps and brace all plugs to prevent them from being sucked into the manhole.
 4. Install the testing equipment according to the manufacturer's instructions.
 5. A vacuum of 10 inches of Hg shall be drawn on the manhole and the loss of 1 inch of Hg vacuum timed. The manhole shall be considered to have passed the test if the time for the loss of 1 inch of Hg vacuum is two (2) minutes or longer.
 6. If the manhole fails the initial test, the Contractor shall locate the leak(s) and make repairs. The manhole shall be retested until a satisfactory test result is obtained.
 7. If a satisfactory vacuum test cannot be obtained, the manhole shall be water exfiltration tested and repaired as necessary.
- E. Manhole Repairs:
1. Correct leakage by reconstruction, replacement of gaskets and/or other methods as approved by the Engineer.
 2. The use of lead-wool or expanding mortar will not be permitted.
- F. After the manholes have been backfilled and prior to final acceptance, any signs of leaks or weeping visible inside the manholes shall be repaired and the manhole made watertight.

END OF SECTION

SECTION 02610PIPE & PIPE FITTINGS FOR BURIED APPLICATIONS - GENERALPART 1 - GENERAL1.1 DESCRIPTION

- A. Furnish, install, support, and test pipe and pipe fittings of the type and size and in the location shown on the Drawings and as specified herein.

1.2 SUBMITTALS TO THE ENGINEER

- A. Submit shop drawings in accordance with SECTION 01340 and the General Conditions of the Construction Contract.
- B. Submit manufacturer's "Certification of Conformance" that pipe and fittings and other piping appurtenances meet or exceed the requirements of these Specifications.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Exercise care during loading, transporting, unloading, and handling to prevent damage of any nature to interior and exterior surfaces of pipe and fittings.
- B. Do not drop pipe and fittings.
- C. Store materials on the project site in enclosures or under protective coverings in accordance with manufacturer's recommendations and as required by the Engineer.
- D. Assure that materials are kept clean and dry.
- E. Do not store materials directly on the ground.
- F. Follow manufacturer's specific instructions, recommendations and requirements.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Materials are specified in the following Sections of this Division.

PART 3 - EXECUTION3.1 INSPECTION

- A. Provide all labor necessary to assist the Engineer to inspect pipe, fittings, gaskets, and other materials.
- B. Carefully inspect all materials at the time of delivery and just prior to installation.
- C. Carefully inspect all pipe and fittings for:
 - 1. Defects and damage.
 - 2. Deviations beyond allowable tolerances for joint dimensions.
 - 3. Removal of debris and foreign matter.
- D. Examine areas and structures to receive piping for:
 - 1. Defects, such as weak structural components, which adversely affect the execution and quality of work.
 - 2. Deviations beyond allowable tolerances for pipe clearances.

- E. All materials and methods not meeting the requirements of this Contract will be rejected.
- F. Immediately remove all rejected materials from the project site.
- G. Start work only when conditions are corrected to the satisfaction of the Engineer.

3.2 INSTALLATION

A. General:

- 1. Install all pipe and fittings in strict accordance with the manufacturer's instructions and recommendations and as specified herein.
- 2. Install all pipes and fittings in accordance with the lines and grades shown on the Drawings and as required for a complete installation.
- 3. Install adaptors, acceptable to the Engineer, when connecting pipes constructed from different materials. Join PVC to cast iron fittings according to manufacturer's instructions.

B. Installation in Trenches:

- 1. Firmly support the pipe and fittings on bedding material as shown on the Drawings and as specified in the appropriate Sections of these Specifications.
- 2. Do not permanently support the pipe or fittings on saddles, blocking stones, or any material which does not provide firm and uniform bearing along the outside length of the pipe.
- 3. Thoroughly compact the material under the pipe to obtain a substantial unyielding bed shaped to fully support the pipe.
- 4. Excavate suitable holes for the joints so that only the barrel of the pipe receives bearing pressure from the supporting material after placement.
- 5. Lay each pipe length so it forms a close joint with the adjoining length and bring the inverts to the required grade.
- 6. Do not drive the pipe down to grade by striking it with a shovel handle, timber, rammer, or any other unyielding object.
- 7. When each pipe length has been properly set, place and compact enough of the bedding material between the pipe and the sides of the trench to hold the pipe in correct alignment.
- 8. After filling the sides of the trench, place and lightly tamp bedding material to complete the bedding as shown on the Drawings.
- 9. Take all necessary precautions to prevent floatation of the pipe in the trench.
- 10. Bedding and backfill for all pipe materials shall be as specified in Section 02200, and as shown on the Drawings.

C. Temporary Plugs:

- 1. When pipe installation work in trenches is not in progress, close the open ends of the pipe with temporary watertight plugs.
- 2. If water is in the trench when work is resumed, do not remove plugs until all danger of water entering the pipe is eliminated.
- 3. Do not use the pipelines as conductors for trench drainage during construction.

3.3 CLEANING AND TESTING

- A. All cleaning and testing shall be performed as specified in Section 02675.

END OF SECTION

SECTION 02615DUCTILE IRON PIPEPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Provide and install ductile iron pipe of the type(s) and size(s) in the location(s) shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere: "Pipe and Pipe Fittings - General" is specified in the appropriate Section in this Division.

1.2 QUALITY ASSURANCE

- A. Standards (As Applicable):
 - 1. Cement-mortar lining for water: ANSI A21.4 (AWWA C104).
 - 2. Rubber gasket joints: ANSI A21.11 (AWWA C111).
 - 3. Ductile iron pipe thickness: ANSI A21.50 (AWWA C150).
 - 4. Ductile iron pipe centrifugally cast in metal or sand lined molds: ANSI A21.51 (AWWA C151).
 - 5. Pipe flanges and fittings: ANSI B16.1 and ANSI A21.10 (AWWA C110).
 - 6. Threaded, flanged pipe: ANSI A21.15 (AWWA C115).
 - 7. Cast and ductile iron fittings: ANSI A21.10 (AWWA C110).
 - 8. Ductile Iron Compact Fittings: ANSI 21.53 (AWWA C153).

1.3 DELIVERY, STORAGE & HANDLING

- A. Exercise extra care when handling ductile iron pipe because it is comparatively brittle.
- B. Exercise extra care when handling cement lined pipe because damage to the lining will render it unfit for use.
- C. Protect the spherical spigot ends and the plain ends of all pipe during shipment by wood lagging securely fastened in place.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Pipe:
 - 1. Unless otherwise shown on the Drawings, the minimum thickness of ductile iron pipe shall be:
 - a. For pipe 4 inches in diameter and smaller: Class 51.
 - b. For pipe 6 inches in diameter and larger: Class 52.
 - c. Pipe with flanges: Class 53.
 - 2. Pipe for use with sleeve type couplings shall have plain ends (without bells or beads) cast or machined at right angles to the axis.

3. Pipe shall be double thickness cement lined and seal coated unless noted otherwise on the Drawings and except for air piping lines which shall be completely unlined.
 4. Pipe for use with split type couplings shall have ends with cast or machined shoulders or grooves that meet the requirements of the manufacturer of the couplings.
 5. Factory applied bituminous coatings shall be furnished on the exterior of all underground piping unless specified otherwise.
 6. The outside of pipe within structures and exposed shall not be coated with bituminous coating, but shall be thoroughly cleaned and given one shop coat of Intertol Rustinhibitive Primer 621 by Koppers Co.; Multiprime by PPG Industries; Chromox 13R50 Primer made by Mobil Chemical Co.; or equivalent.
- B. Joints (as shown on Drawings or as specified):
1. Flanged:
 - a. Provide specially drilled flanges when required for connection to existing piping or special equipment.
 - b. Flanges shall be long-hub screwed tightly on pipe by machine at the foundry prior to facing and drilling.
 - c. Gaskets:
 - (1) Ring type of rubber with cloth insertion.
 - (2) Thickness of gaskets 12 inches in diameter and smaller: 1/16 inch.
 - (3) Thickness of gaskets larger than 12 inches in diameter: 3/32 inch.
 - (4) On high temperature applications such as air lines, the gaskets shall be suitable for service from 40°F to 200°F.
 - d. Fasteners:
 - (1) Make joints with bolt, studs with a nut on each end, or one tapped flanged with a stud and nut.
 - (2) The number and size of bolts shall meet the requirements of the applicable ANSI standard.
 - (3) Nuts, bolts, and studs shall be Grade B meeting the requirements of ASTM A307.
 - (4) After jointing, coat entire joint with bituminous material compatible with pipe coating unless other coating required by Section 09900.
 - e. When applicable, provide and install flange clamps as shown on the Drawings.
 2. Push-on and Mechanical Joint:
 - a. The plain ends of push-on pipes shall be factory machined to a true circle and chamfered to facilitate fitting the gasket.
 - b. Provide gaskets manufactured from a composition material suitable for exposure to the fluid to be contained within the pipe. On high temperature applications such as air lines, the gaskets shall be suitable for service from 40 °F to 200°F.
 - (1) In the event contaminated soils are encountered nitrite gaskets shall be used.
 - c. Bolts and nuts for buried mechanical joints shall be made of A588 steel.

3. Grooved split ring couplings, sleeve couplings, flexible joints and couplings, shall be supplied as specified in "Couplings and Connectors" Section.
4. Joint Bracing:
 - a. Provide joint bracing to prevent the piping from pulling apart under pressure as required and as shown on the Drawings.
 - b. Types of bracing:
 - (1) Pipe and fittings furnished with approved lugs or hooks cast integrally for use with socket pipe clamps, tie rods, or bridles. Bridles and tie rods shall be a minimum of 3/4 inch diameter except where they replace flange bolts of a smaller size, in which case they shall be fitted with a nut on each side of the pair of flanges. The clamps, tie rods, and bridles shall be coated with bituminous paint in buried installations and shall be coated with the same coatings as the piping system in interior installations after assembly or, if necessary, prior to assembly.
 - (2) Mechanical joint follower gland pipe restrainers.
 - (a) Ductile iron.
 - (b) Ductile iron or A588 steel set screws.
 - (c) Working pressure 350 psi, up to 8 inches; 250 psi, 8 inches to 16 inches.
 - (d) Test pressure two times working pressure.
 - (3) Other types of bracing as shown on the Drawings.
 - c. Joint bracing is required on all fittings in addition to required thrust blocks, and as detailed on the Drawings.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Provide all labor necessary to assist the Engineer to inspect pipe, fittings, gaskets, and other materials.
- B. Carefully inspect all materials at the time of delivery and just prior to installation.
- C. Carefully inspect all pipe and fittings for:
 1. Defects, such as weak structural components that adversely affect the execution and quality of work.
 2. Deviations beyond allowable tolerances for pipe clearances.
- D. Immediately remove all rejected materials from the project site.

3.2 INSTALLATION

- A. Assembling Joints:
 1. Push-on Joints:
 - a. Insert the gasket into the groove of the bell.
 - b. Uniformly apply a thin film of special lubricant over the inner surface of the gasket that will contact the spigot end of the pipe.
 - c. Insert the chamfered end of the plain pipe into the gasket and push until it seats against the bottom of the socket.
 2. Bolted Joints:

- a. Remove rust preventive coatings from machined surfaces prior to assembly.
 - b. Thoroughly clean and carefully smooth all burrs and other defects from pipe ends, sockets, sleeves, housings and gaskets.
 3. Flanged Joints:
 - a. Insert the nuts and bolts (or studs), finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.
 - b. Execute care when tightening joints to prevent undue strain upon valves, pumps, and other equipment.
 4. Mechanical Joints:
 - a. Thoroughly clean, with a wire brush, surfaces that will be in contact with the gaskets.
 - b. Lubricate the gasket, bell, and spigot by washing with soapy water.
 - c. Slip the gland and gasket, in that order, over the spigot and insert the spigot into the bell until properly seated.
 - d. Evenly seat the gasket in the bell at all points, center the spigot, and firmly press the gland against the gasket.
 - e. Insert the bolts, install the nuts finger tight, and progressively tighten diametrically opposite nuts uniformly around the joint to the proper tension with a torque wrench.
 - f. The correct range of torque (as indicated by a torque wrench) and the length of wrench (if not a torque wrench) shall not exceed:
 - (1) Range or Torque: 60-90 ft.-lbs.
 - (2) Length of Wrench: 10 inches.
 - g. If effective joint sealing is not attained at the maximum torque specified above, disassemble, thoroughly clean, and reassemble the joint. Do not overstress the bolts to tighten a leaking joint.
 5. Bell and Spigot Joints:
 - a. Thoroughly clean the bell and spigots and remove excess tar and other obstructions.
 - b. Insert the spigot firmly into place and hold securely until the joint has been properly completed.
- B. Fabrication:
1. Tapped Connections:
 - a. Make all tapped connections as shown on the Drawings or as required by the Engineer.
 - b. Make all connections watertight and of adequate strength to prevent pullout.
 - c. Drill and tap normal to the longitudinal axis of the pipe.
 - d. The maximum sizes of taps in pipes and fittings without busses shall not exceed the sizes listed in the appendix of ANS A21.51 based on 2 full threads for ductile iron.
 2. Cutting:
 - a. Perform all cutting as set forth in AWWA C600.
 - b. Carefully chamfer all cut ends to be used with push-on joints to prevent damage to gaskets when pipe is installed.

- C. Pipe Deflection:
1. Push-on and Mechanical Joints:
 - a. The maximum permissible deflection of alignment at joints shall be limited to that given in AWWA C600.
 2. Flexible Joints:
 - a. The maximum deflection in any direction shall not exceed the manufacturer's instructions and recommendations.

END OF SECTION

SECTION 02616DUCTILE IRON PIPE FITTINGSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install ductile iron pipe fittings of the type(s) and size(s) in the location(s) shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere: "Concrete, Cradles, Arches, Encasements and Thrust Block - is specified in Division 3".

1.2 QUALITY ASSURANCE

- A. Standards:
 - 1. Cement-mortar lining for water: ANSI A21.4 (AWWA C104).
 - 2. Ductile iron fittings: ANSI A21.53 (AWWA C153).
 - 3. Rubber gasket joints: ANSI A21.11 (AWWA C111).
 - 4. Ductile iron compact fittings are not acceptable for this project.
- B. Fittings shall be manufactured in the United States and/or Canada.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Standard Fittings:
 - 1. Pressure rating of 350 psi for D.I. compact fittings and 250 psi for all others unless indicated otherwise on the Drawings or as specified.
 - 2. Flanged fittings shall be ANSI B16.1, Class 125, unless indicated otherwise.
 - 3. Joints the same as the pipe with which they are used or as shown on the Drawings.
 - 4. Cement lining and seal coat unless noted otherwise on the Drawings.
 - 5. Factory applied bituminous coatings shall be furnished for all underground fittings.

2.2 MANUFACTURER

- A. Tyler
- B. Or equivalent.

PART 3 - EXECUTION3.1 INSTALLATION

- A. General:
 - 1. Install in strict accordance with the pipe and fitting manufacturer's instructions and recommendations and as specified or as shown on the Drawings.
 - 2. Concrete thrust blocks or other acceptable thrust resistant system is required at all fittings on pressure pipe. Where thrust blocks are used, these shall be placed against undisturbed soil or screened gravel compacted to 95 percent and shall be placed so that the joints are accessible for repairs.

END OF SECTION

SECTION 02622POLYVINYL CHLORIDE (PVC) NON-PRESSURE PIPEPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Provide and install PVC non-pressure pipe and fittings of the size(s) and type(s) and in the location(s) shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere: (When Applicable)

1. Excavation and backfill, dewatering, pavement, borrow and bedding material, and cleaning and testing requirements are specified in the appropriate sections of this division.
2. Pipe & Pipe Fittings - General is specified in Division 15.

1.2 QUALITY ASSURANCE

A. Manufacturers:

1. Certain-Teed.
2. J-M Manufacturing.
3. Or equivalent.

1.3 SUBMITTALS TO THE ENGINEER

- A. Submit shop drawings in accordance with the General Conditions of the Construction Contract.
- B. Submit manufacturer's "Certification of Conformance" that pipe and fittings meet or exceed the requirements of these Specifications.
- C. Submit other documents as specified in the appropriate Sections of this Division.

1.4 DELIVERY STORAGE AND HANDLING

- A. Provide all labor necessary to assist the Engineer to inspect pipe, fittings, gaskets and other materials.
- B. Carefully inspect all materials at the time of delivery and just prior to installation.
- C. Carefully inspect all pipe and fittings for:
 1. Defects and damage
 2. Deviations beyond allowable tolerances for joint dimensions.
 3. Removal of debris and foreign matter.
- D. Examine area and structures to receive piping for:
 1. Defects, such as weak structural components that adversely affect the execution and quality of work.
 2. Deviations beyond allowable tolerance for pipe clearances.
- E. All materials and methods not meeting the requirements of the Contract Documents will be rejected.
- F. Immediately remove all rejected materials from the project site.

2.1 MATERIALS

A. Pipe and Fittings:

1. The polyvinyl chloride pipe and fittings, including those required for stubs, shall conform to ASTM standard specification for PVC Sewer Pipe and Fittings, Designation D 3034 (SDR 35) (4" to 15"), F679 (18" to 27").
2. Straight pipe shall be furnished in lengths of not more than 13 feet.
3. Saddles will not be allowed.

B. Joints:

1. Joints for the polyvinyl chloride pipe shall be push-on joints using factory installed elastomeric ring gaskets.
2. The gaskets shall be securely fixed into place by the manufacturer so that they cannot be dislodged during joint assembly.
3. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oils and ground water, and which will endure permanently under the conditions of the proposed use.
4. The joints shall conform to ASTM Specifications for Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals, Designation D3212-76.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Inspection:

1. Each pipe unit shall be inspected before being installed. No single piece of pipe shall be laid unless it is generally straight.
2. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16 inch per foot of length.
3. If a piece of pipe fails to meet this requirement for straightness it shall be rejected and removed from the site.
4. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit.

B. Jointing:

1. All pipe and fittings shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.
2. Pipe and fittings shall be installed to the lines and grades indicated on the drawings or as required by the Engineer. Care shall be taken to insure true alignments and gradients.
3. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation.
4. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe units together so that they will fit with a minimum open recess inside and outside and have

tightly sealed joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.

5. Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.

C. Pipe Deflection:

1. Pipe provided under this specification shall be installed so there is no more than a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (normal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
2. The Contractor shall wait a minimum of 30 days after completion of a section of sewer, including placement and compaction of backfill, before measuring the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer.
3. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.

D. Testing:

1. Clean and test pipe in accordance with appropriate sections of this division.

END OF SECTION

SECTION 02626COPPER SERVICE PIPEPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install copper pipe of the type and size and in the locations shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere:
 - 1. Pipe & Pipe Fittings - General is specified in Division 15
 - 2. Excavation & Backfill, pavement, dewatering, borrow and bedding are specified in this Division.

1.2 QUALITY ASSURANCE

- A. Seamless copper water tube, ASTM B88.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Type K, annealed.

PART 3 - EXECUTION3.1 INSTALLATION

- A. Jointing
 - 1. Flared Joints (if specified)
 - a. Ream on file the pipe to remove burrs.
 - b. Slip fitting over end of pipe to be flared.
 - c. Expand tube using flaring tools.
 - d. Inspect for cracks, splits or other damages and replace if necessary.
 - e. Squarely seat the flared end on fitting and tighten nuts.
 - 2. Packed on compression joints (if specified)
 - a. Cut pipe squarely.
 - b. Ream or file pipe to remove burrs.
 - c. Seat pipe in fittings and tighten nut.
 - 3. Adapters: Use as required to connect to existing services.
- B. Bending Pipe
 - 1. Bend pipe with suitable tools to provide smooth bend free of any cracks or buckles.
 - 2. Provide "goose neck" in new services as shown on Drawings.

END OF SECTION

SECTION 02641GATE VALVESPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish, install and test gate valves of the type(s) and size(s) and in the location(s) shown on the Drawings and as specified.
- B. Related Work Specified Elsewhere: "Valves and Specialties - General" and "Ductile Iron Pipe" are specified in this Division.

1.2 QUALITY ASSURANCE

- A. All gate valves of same type and style shall be manufactured by one manufacturer.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Waterworks type NRS valves (AWWA):
 - 1. Valve Body, bonnet and stuffing box - Cast iron (ASTM A126, C1B), coated inside and out with fusion bonded epoxy meeting AWWA C550.
 - 2. Resilient Wedge - Ductile iron wedge with bonded Nitrile elastomer covering.
 - 3. Stem - Manganese bronze, ASTM B584
 - 4. Stuffing box O-rings
 - a. Two O-rings, each nitrile rubber.
 - b. Capable of changing under pressure.
 - 5. Wedgenut - Bronze, ASTM B62
 - 6. Bolting - stainless steel Type 18-8, ASTM F593, GP1
 - 7. End Connections
 - a. Buried valves - mechanical joints
 - 8. Operation
 - a. Buried valves - 2 inch square nut, cast iron, ASTM A126, C1B
 - b. Opening Direction – Right (clockwise)
 - 9. Manufacturer
 - a. Kennedy
 - b. Darling
 - c. Mueller
 - 10. Standards - valves shall meet or exceed AWWA C509, latest edition.
- B. Accessories: As shown on the Drawings and required for proper operation.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install valves with stem position vertical.
- B. Valve box vertical and centered over operating nut.
- C. Valve box supported during backfilling and maintained vertical.
- D. Install and test in accordance with AWWA C500 and AWWA C-509 latest revision.
- E. For PVC or PE main, install anchor rods around the valve body or through the mounting lugs and embed the rods in concrete beneath the valve.

END OF SECTION

SECTION 02642CORPORATION STOPSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install corporation stops of the type(s) and size(s) and in the location(s) shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

- A. All corporation stops shall be manufactured by one manufacturer.
- B. Qualifications of Manufacturer: Products have proven reliable in similar installations over a reasonable number of years.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Constructed of brass.
- B. Outlet shall have a compression pack joint.
- C. Inlet shall have CC thread.
- D. 300 psi Working Pressure
- E. Acceptable Manufacturers:
 - 1. Mueller 300
 - 2. Ford Meter Box Company
 - 3. Or equivalent

PART 3 - EXECUTION3.1 INSTALLATION

- A. Install at locations shown on the Drawings and as specified in accordance with manufacturer's instructions.
- B. Check and adjust all corporation stops for smooth operation.

END OF SECTION

SECTION 02643CURB STOPSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install curb stops of the type(s) and size(s) and in the location(s) shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

- A. All curb stops shall be manufactured by one manufacturer.
- B. Qualifications of Manufacturer: Products shall have proven reliable in similar installations over a reasonable number of years.
- C. Acceptable Manufacturers:
 - 1. Mueller 300
 - 2. Ford Meter Box Company
 - 3. Or equivalent

PART 2 - PRODUCTS2.1 PRODUCT CONSTRUCTION

- A. Constructed of brass.
- B. Inlet shall be compression pack joint.
- C. Outlet shall be female C.C. thread.
- D. 300 psi working pressure shall be required.

PART 3 - EXECUTION3.1 INSTALLATION

- A. Install at locations shown on the Drawings and in accordance with manufacturer's instructions.

3.2 ADJUSTMENTS

- A. Check and adjust all curb stops for smooth operation.

END OF SECTION

SECTION 02644HYDRANT ASSEMBLIESPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install hydrant assemblies of the type(s) and size (s) and in the locations (s) shown on the Drawings and as specified herein.
- B. Hydrant Assemblies consist of:
 - 1. Hydrant tee.
 - 2. 6 inch gate valve and valve box.
 - 3. 6 inch hydrant branch piping.
 - 4. Hydrant.
 - 5. Drainage material.
 - 6. Thrust blocking.
- C. Related Work Specified Elsewhere:
 - 1. "Gate Valves" specified in Section 02641.
 - 2. Excavation and backfill, pavement, dewatering, borrow and bedding are specified in this Division.

1.2 QUALITY ASSURANCE

- A. Hydrants shall conform to AWWA C502 and all hydrants shall be from one manufacturer.
- B. Gate valves shall conform to AWWA C500.
- C. Acceptable Manufacturers:
 - 1. Waterous - Pacer
 - 2. Or approved equal.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Fire Hydrants:
 - 1. Dry barrel type with a 5 inch minimum valve opening.
 - 2. Two (2) 2-1/2 inch hose connections and one (1) 4-1/2 inch pumper connection.
 - a. 2-1/2 inch outlets: 60° V threads, 7-1/2 threads to the inch, external threads 3-1/16 inches, O.D. National Standard threads.
 - b. 4-1/2 inch outlet: 4 threads to the inch, external threads 5-3/4 inches, O.D. National Standard threads.
 - c. Supply adapters if existing fire fighting equipment does not match the threads specified above.
 - 3. 150 pounds working pressure and 300 pounds hydrostatic test pressure.
 - 4. Working parts shall be bronze and open clockwise unless otherwise specified.

5. Designed with standpipe breaking ring or breakable sections.
6. Supply one (1) collision repair kit for every twenty-five (25) hydrants installed.
7. Caps shall be attached to hydrant body by chains.
- B. Gate Valves: Waterworks type non-rising stem AWWA valve as specified in Section 02641.
- C. Valve Boxes:
 1. Cast iron, minimum thickness 3/10 inch with the word "WATER" cast in covers.
 2. Be of such length as required without full extensions.
 3. As specified in this Division.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install hydrants as shown in the details and using manufacturer's written instructions.
- B. No hydrant assembly shall be backfilled until approved by the Engineer.
- C. Provide drainage material and thrust blocks as shown.
- D. Provide barrel extensions as required for hydrant to be installed at proper grade.
- E. Provide finish paint on all exposed surfaces. Color shall meet Owner's requirements as approved by the Engineer.

3.2 CLEANING

- A. Clean all hydrants of concrete, etc. and repaint as necessary to the satisfaction of the Engineer.

END OF SECTION

SECTION 02645CURB BOXESPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install curb boxes of type (s) and size (s) and in the locations shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere: "Valves and Specialties - General" is specified in Division 15.

1.2 QUALITY ASSURANCE

- A. All curb boxes shall be manufactured by one manufacturer.
- B. Qualifications of Manufacturer: Products have proven reliable in similar installations over a reasonable number of years.
- C. Acceptable Manufacturers:
 - 1. Quality Water Products.
 - 2. Mueller Co.
 - 3. Or equivalent.

PART 2 - PRODUCTS2.1 MATERIALS AND FABRICATION

- A. Cast iron base piece, steel upper, cast iron lid, and threaded bronze plug with pentagon nut (Rope Thread).
- B. Extension type and arch pattern base with 5/8" diameter, minimum, 30" stationary rod.

PART 3 - EXECUTION3.1 INSTALLATION

- A. Install as shown on the Drawings and/or as requested by the Engineer.
 - 1. When installation is complete no pressure shall be exerted by the curb box on either the curb stop or the service pipe.

END OF SECTION

SECTION 02646VALVE BOXESPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install valve boxes of type(s) and size(s) and in the locations shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

- A. All valve boxes shall be manufactured by one manufacturer.
- B. Qualifications of Manufacturer: Products to have been proven reliable in similar installations over a reasonable number of years.
- C. Acceptable Manufacturers:
 - 1. Mueller
 - 2. Quality Water Products
 - 3. Or Equivalent

PART 2 - PRODUCTS2.1 MATERIALS

- A. The valve box shall be ductile iron, slip type two-piece integral base, 5-1/4 inch shaft. Top section with flanges.
- B. Cast or Ductile iron, with the word "Water" cast in covers.
- C. Belled Base Section.

PART 3 - EXECUTION3.1 INSTALLATION

- A. Installation as shown on the Drawings and/or as specified herein.
 - 1. When installation is complete, no pressure shall be exerted by valve box on the water main or on the valve.
 - 2. Be of such length as required without full extension. Minimum lap 6 inches.

END OF SECTION

SECTION 02647COUPLINGS & CONNECTORSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install couplings and connectors of the type(s) and size(s) in the location(s) shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere: "Pipe & Pipe Fittings - General" is specified in this Division.

1.2 QUALITY ASSURANCE

- A. Minimum pressure rating equal to that of the pipeline in which they are to be installed.
- B. Couplings and connectors, other than those specified herein, are subject to the Engineer's approval.

PART 2 - PRODUCTS2.1 MATERIALS

- A. All Couplings and Connectors:
 - 1. Gasket Materials: Composition suitable for exposure to the liquids to be contained within the pipes.
 - 2. Diameters to properly fit the specific types of pipes on which couplings and connectors are to be installed.
- B. Sleeve Type Couplings (When Applicable):
 - 1. Buried Couplings (for joining pipe of similar diameters):
 - a. Constructed from malleable or ductile iron.
 - b. Solid sleeve with M.J. ends conforming to AWWA C110 or AWWA C153. Sleeve shall be a minimum of 12" long
 - c. Bolts - AWWA C-111
 - d. Acceptable Manufacturers:
 - (1) Tyler
 - (2) Or equivalent
- C. Flanged Adapters (When Applicable):
 - 1. For joining plain end or grooved end pipe to flanged pipes and fittings.
 - 2. Adapters shall conform in size and bolt hole placement to ANSI standards for steel and/or cast iron flanges 125 or 150 pound standard unless otherwise required for connections.
 - 3. Buried Sleeve Type:
 - a. Constructed from cast iron.
 - b. Bolts: ASTM A588 steel or galvanized steel.

- c. Acceptable Manufacturers:
 - (1) Dresser Manufacturing Co. - Style 38 locking type for splash end, ductile iron, asbestos cement and steel pipes with diameters of 3 inches through 12 inches,
 - (2) Clow Corp., Style 248
 - (3) Or equivalent.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Sleeve Type Couplings (When Applicable):
 - 1. Thoroughly clean pipe ends for a distance of 8 inches from the ends prior to installing couplings, and use soapy water as a gasket lubricant.
 - 2. Slip a follower ring and gasket (in that order) over each pipe and place the middle ring centered over the joint.
 - 3. Insert the other pipe length into the middle ring the proper distance.
 - 4. Press the gaskets and followers evenly and firmly into the middle ring flares.
 - 5. Insert the bolts, finger tighten and progressively tighten diametrically opposite nuts uniformly around the adapter with a torque wrench applying the torque recommended by the manufacturer.
 - 6. Insert and tighten the tapered threaded lock pins.
- B. Buried Epoxy Coated Steel Couplings: Thoroughly coat all exterior surfaces, including nuts and bolts after assembly and inspection by the Engineer with a coal tar approved by the Engineer. Prior to coating, roughen the epoxy with emory paper and follow with a solvent cleaner (aeromatic similar to xylol). Dry film thickness of the coal tar is to be 12-16 mils.
- C. Install thrust rods, supports, and other provisions to properly support pipe weight and axial equipment loads.

END OF SECTION

SECTION 02648TAPPING SLEEVES & VALVESPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install tapping sleeves and valves of the type(s) and size(s) and in the location(s) shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere:
 - 1. "Pipe, Pipe Fittings & Testing" this Section.

1.2 QUALITY ASSURANCE

- A. Tapping Valves: Shall meet the requirements of Division 15.
- B. Tapping Sleeves: Shall be cast or ductile iron split sleeve with M.J. ends.
- C. Acceptable Manufacturers:
 - 1. A. P. Smith.
 - 2. Clow Corporation.
 - 3. Or equivalent.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Valves: Shall be flanged by mechanical joint outlet with non-rising stem as specified in Division 15.
- B. Tapping Sleeves:
 - 1. Shall be suitable for use on cast iron, ductile iron, PVC or AC as applicable.
 - 2. Cast or ductile iron split sleeve with MJ ends and flanged outlet.
 - 3. Working pressure - 200 psi.
- C. Gasket: Neoprene type gasket suitable for potable water.
- D. Valve Boxes: As specified in Section 02646.

PART 3 - EXECUTION3.1 INSTALLATION

- A. Tapping Sleeve and Valve:
 - 1. Outlet flange face shall be set vertically, and sleeve shall be squarely centered on the main to be tapped.
 - 2. Support shall be provided under the sleeve and valve during the tapping operation.
 - 3. Thrust blocks shall be provided under and behind all tapping sleeves.
 - 4. After completing the tap, the valve shall be flushed to ensure the valve seat is clean.
 - 5. Boxes shall be set vertically and adequately supported squarely over the operating nut.

- B. Installation shall be made under pressure and tapping machine shall be furnished by the Contractor.

3.2 ADJUSTING

- A. Valve Boxes: Top of valve box shall be adjusted to be flush with final grade.

END OF SECTION

SECTION 02650BURIED UTILITY MARKINGSPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. This work shall consist of providing utility line markings installed above all buried lines installed as part of this contract as indicated on the Drawings and replacing existing markings disturbed as part of this contract.

B. Related Work Specified Elsewhere:

1. Pipe, excavation, backfill, insulation are specified in the appropriate Sections in this Division.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Materials and color shall be in accordance with latest AASHTO specifications for pipe and utility marking.
- B. For ferrous pipe material use 0.004" minimum polyethylene film; 6" wide clearly marking type of buried utility
- C. For non-ferrous pipe material (e.g. Concrete, PVC, PE, etc.) use detection tape composit of polyethylene and metallic core 6" wide clearly marking type of buried utility.
- D. Seton Identification Products, New Haven, CT, or equal.

PART 3 - EXECUTION3.1 INSTALLATION

- A. Marking tape shall be installed over utility lines centerline and buried 24" below grade.
- B. Markings damaged during opening of trench shall be reinstalled with 2' overlap at broken sections.

END OF SECTION

SECTION 02675CLEANING, TESTING AND CHLORINATION OF WATER MAINSPART 1 GENERAL1.1 DESCRIPTION

- A. The work of this section includes the furnishing of all labor, tools, equipment and materials and performing all operations necessary for the flushing, pressure testing, leakage testing and chlorination of water mains as specified herein and as required to complete the work.

1.2 QUALITY ASSURANCE

- A. Standards (as applicable):
 - 1. All work shall be in accordance with this specification and AWWA C651. Where conflicts appear between these specifications and AWWA C651 the more stringent requirement shall apply.
 - 2. Chlorine solution for disinfecting water mains and appurtenances shall be made from either liquid sodium hypochlorite, or solid calcium hypochlorite, which shall conform to the latest AWWA B300 Standard for Hypochlorite.
 - 3. Chlorine test kits shall be as described in the current edition of AWWA M12 - Simplified Procedures for Water Examination.
 - 4. Disposal of chlorinated water as per AWWA C651, Appendix B.

1.3 COORDINATION

- A. Use of water will only be as approved and coordinated by the Owner.
- B. All flushing, pressure and leakage testing and chlorinating shall be done by the Contractor in the presence of the Engineer and in the presence of the local plumbing or building inspector in accordance with the requirements of the local and state plumbing codes and the appropriate Sections of these Specifications, at no additional cost to the Owner.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Each temporary blow-off shall consist of a corporation cock, type K copper tubing and a curb stop, each of not less than 1-inch diameter.
- B. A pumping unit or proportionate feeder suitable for delivering a hypochlorite solution to the isolated main shall be provided. The unit used shall prevent chlorine solution from flowing back into the existing system.

PART 3 - EXECUTION

3.1 GENERAL

- A. Thoroughly clean all piping prior to testing. Remove all dirt, dust, oil, grease and other foreign material. Exercise care while cleaning to avoid damage to linings and coatings.
- B. Supply all labor, equipment, materials, gages, and pumps required to conduct the tests. The drawings do not detail taps, gages, plugs and other related materials required to perform testing. These materials are the responsibility of the Contractor.
- C. Flushing, testing and chlorinating of the mainline shall closely follow main laying work. As the mainline is installed, it shall be tested approximately every 1,000 feet, or between line valves, whichever is less. Should the mainlines fail to be flushed, tested, and chlorinated as specified, the main laying work shall be suspended until the flushing, testing and chlorinating is done.
- D. Final acceptance of the water main shall be based on successful (negative) results of bacteriological tests, which shall be done on samples taken from the main following chlorination and final flushing. Locations of samples shall be determined by the Engineer.
- E. The testing and related procedures described herein, shall be performed in the order listed.
- F. The Contractor, with the assistance of the Owner, shall fill mains as slowly as practicable so as not to cause dirty water and serious pressure drops within the existing system.

3.2 FLUSHING

- A. All new water mains, and existing water mains that have been drained and cut-into for making connections, shall be thoroughly flushed prior to pressure or leakage testing or final chlorination. Flushing shall be accomplished by partially opening and closing valves, hydrants, and blowoffs, several times, under expected line pressure, with flow velocities of not less than 2.5 feet per second, in the main. The size and number of hydrant outlets and/or main taps to provide the required flow (at 40 psi residual pressure) is as follows:

Minimum Required Flow and Openings Required to Flush Water Mains
(Assuming 40 psi Residual Pressure in Water Mains)

Main Diameter (in.)	Flow Required to Produce 2.5 fps in Main (gpm)	Minimum Size of Taps (in.)	Hydrant Outlets Number	Size (in.)
4	100	15/16	1	2-1/2
6	220	1-3/8	1	2-1/2
8	390	1-7/8	1	2-1/2
10	610	2-5/16	1	2-1/2
12	880	2-13/16	1	2-1/2
16	1565	3-5/8	2	2-1/2

1. If less than a 40 psi residual is available in the main, with the size tap shown above then a larger, or more tap(s) or hydrant outlets will be required, as determined by the Engineer.
2. The length of time for flushing, at or above the minimum allowable velocity, shall be computed to allow a minimum of 3 times the total volume of water in the main to be flushed to waste. Flushing shall be done in the presence of the Engineer.

3.3 AIR REMOVAL

- A. Following flushing, and before applying the specified test pressure, air shall be completely expelled from the mains, valves, and hydrants. After all air has been expelled, the air blowoffs can be closed, and the test pressure applied.

3.4 PRESSURE TEST

- A. All new water mains, or any sections thereof, shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure that will exist at the point of testing, or 150 psi, whichever is greater. Test pressures shall meet the following requirements:
 1. Be of at least 2-hour duration.
 2. Be not less than 1.25 times the expected system working pressure at the highest point along the test section.
 3. Not exceed main or thrust-restraint design pressures.
 4. Not vary by more than + 5 psi for the duration of the test.
 5. Not exceed 2-times the rated pressure of the valves or hydrants when the pressure boundary includes closed valves or hydrants. Valves shall not be operated in either direction at differential pressure greater than the rated pressure.
 6. Not exceed 2-times the rated pressure of the valves when the pressure boundary of the test section includes closed butterfly valves or resilient seated gate valves.
- B. Each section of main shall be slowly raised to the specified test pressure for two separate periods. The first period shall be for 15-minutes, after which the pressure shall be allowed to drop slowly back to system pressure. The pressure shall then be slowly raised again to the specified test pressure and maintained for 2-hours. The test pressure shall be based on the elevation of the lowest point of the main, in the test section and shall be corrected to the elevation of the test gauge, as directed by the Engineer. The test pressure shall be applied by means of a pump connected to the main, in an approved manner, and which will prevent any backflow into the existing system. Valves shall not be operated in either the closing or opening direction, at differential pressure greater than the rated pressure.
- C. Any exposed main, fittings, valves, hydrants and joints shall be carefully examined during the test. Any damaged or defective main, fittings, hydrants, or valves discovered following, or as a result of the pressure test shall be repaired or replaced with sound material. If faulty materials are removed and replaced, the pressure testing procedure shall be repeated.

3.5 LEAKAGE TEST

- A. Leakage testing shall be conducted concurrently with the pressure test.
- B. Leakage is defined as the quantity of water that must be pumped into the new main during the test, or any section thereof, required to maintain pressure within 5 psi of the starting test pressure. Leakage shall be recorded to the nearest one-tenth of a gallon. The Contractor shall employ qualified personnel throughout the testing. Leakage shall not be measured by a drop in pressure over a period of time.
- C. Leakage in the test section must be less than an amount determined as follows:

$$L = \frac{SD(P^{0.5})}{133,200}, \text{ where}$$

L = allowable gallons of leakage per hour

S = the length of main tested, in feet

D = the nominal main diameter in inches

P = the average test pressure during the test, in psi

- D. The leakage formula is based allowable leakage of 11.65 gallons per day, per mile of main, per inch (nominal) of main diameter, at a pressure of 150 psi. Allowable leakage under various conditions is shown below.

Allowable Leakage per 1,000 Feet of Mainline

Average Test Pressure(psi)	Nominal Diameter (inches)						
	6	8	10	12	16	20	24
250	0.71	0.95	1.19	1.42	1.90	2.37	2.85
225	0.68	0.90	1.13	1.35	1.80	2.25	2.70
200	0.64	0.85	1.06	1.28	1.70	2.12	2.55
175	0.59	0.80	0.99	1.19	1.59	1.98	2.38
150	0.55	0.74	0.92	1.10	1.47	1.84	2.21
125	0.50	0.67	0.84	1.01	1.34	1.68	2.01
100	0.45	0.60	0.75	0.90	1.20	1.50	1.80

1. If the mainline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.
 2. When testing against closed metal seated valves, an additional leakage shall be allowed per closed valve of 0.0078 gallons per hour, per inch of nominal valve diameter.
 3. When hydrants are in the test section, the test shall be made against the closed hydrant(s).
- E. Acceptance shall be determined on the basis of allowable leakage. If leakage in any test is greater than that specified, the Contractor shall locate and make repairs as necessary until the leakage is within the specified allowance.
 1. All visible leaks are to be repaired regardless of the amount of leakage.

2. All water mains shall be pressure and leakage tested in the presence of the Engineer, in order to qualify for acceptance.

3.6 CHLORINATION

- A. The method of chlorination shall be the *Continuous Feed Method* as described hereinafter. Chlorination procedures will not be allowed until acceptable flushing and pressure testing has been performed and accepted. The continuous feed method consists of the following steps:
 1. Prior to the application of chlorine, confirm that valves are closed to prevent back-feeding chlorine solution into the existing system.
 2. At a point not more than 10 feet downstream from the beginning of the new main, fill the main with chlorinated potable water, having an initial concentration of 25 mg/l free chlorine residual.
 - a. Water from the existing distribution system or other approved source of supply shall flow at a constant measured rate, into the new main. In the absence of a meter, the rate may be approximated by measuring the discharge rate at the end of the test section with a pito-gauge or by measuring the time to fill a container of known volume.
 3. The application of chlorine solution shall continue until the entire main is filled with water having 25 mg/l of free available chlorine. To assure that 25 mg/l free chlorine residual concentration is achieved throughout the test section, the Contractor shall measure chlorine concentration at regular intervals.
- B. The amount of chlorine required to obtain a concentration of 25 mg/l per 100 feet of various diameter mains is as follows.

Chlorine Required to Obtain 25 mg/l per 100 feet of Various Diameters

Main Diameter (inches)	Sodium Hypochlorite (gallons)				Calcium Hypochlorite (ounces)
	5% Available Chlorine	10% Available Chlorine	12.5% Available Chlorine	15% Available Chlorine	65% Available Chlorine
4	0.03	0.02	0.02	0.01	0.32
6	0.08	0.04	0.03	0.03	0.75
8	0.13	0.07	0.06	0.06	1.30
10	0.20	0.10	0.09	0.07	2.10
12	0.28	0.15	0.12	0.10	2.95
16	0.50	0.25	0.22	0.17	5.30
20	0.80	0.40	0.34	0.28	8.40
24	1.15	0.60	0.50	0.40	12.00

1. The above quantities are to be added to a sufficient quantity of water, dissolved, and mixed. The solution shall be injected into the main as specified.

2. The quantities shown are based on concentrations of available chlorine by volume. Extended or improper storage may have caused a loss of available chlorine.
 3. For concentrations of 50 ppm, double the quantities listed.
- C. The chlorinated water shall be retained in the main for a minimum of 24-hours. At the end of this 24 hour period, retest portions of the main to confirm that a minimum of 10 mg/l free available chlorine residual exists in the main. If the residual chlorine is less than 10 mg/L, acceptable bacteria results may not be obtained.

3.7 FINAL FLUSHING OF CHLORINATED WATER

- A. After the initial 24-hour period period, the heavily chlorinated water shall be flushed from the main until chlorine measurements show the concentration in water leaving the main is no higher than that generally prevailing in the system.
- B. The Contractor shall obtain approval of location(s) for discharging the heavily chlorinated water, which will result from the chlorination procedures. Great care shall be exercised in the selection of the rate of flow and the discharge points, in order to minimize complaints, and damage to public or private property.
- C. The heavily chlorinated water shall be suitably and thoroughly neutralized prior to disposal into the environment. In no case shall chlorinated or neutralized water be discharged directly into a water body. If necessary, state, federal, and local regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water.

3.8 BACTERIOLOGICAL TESTS

- A. After final flushing and before the water main is placed in service, water samples shall be collected twice (24-hours apart) by the Engineer or Owner and tested for bacteriological quality in accordance with standard methods. Water samples shall show the absence of coliform organisms and background bacteria.
- B. If, during construction, trench water has entered the main, or if in the opinion of the Engineer excessive quantities of dirt or debris have entered the main, bacteriological samples shall be taken at intervals of approximately 200 feet and shall be identified as to location. Samples shall be taken of water that has stood in the main for at least 24-hours after final flushing has been completed.
- C. Samples shall be obtained through a corporation cock and copper tubing installed by the Contractor. The use of hose or fire hydrants for sampling is done so at the Contractors risk.
- D. The Engineer or Owner shall deliver samples to a laboratory approved by the Department of Health Services for bacterial analysis. The Owner shall pay for the cost of analysis. Only after each consecutive sample is approved shall the mains be incorporated into the water system. In the event that positive reports of contamination are received, the mains shall be flushed and chlorinated as many times as may be necessary to obtain approved (negative) results.

3.9 RE-CHLORINATION

- A. If the initial chlorination fails to produce satisfactory bacteriological samples, the main shall be re-flushed and re-sampled.

3.10 CHLORINATION PROCEDURES WHEN CUTTING INTO OR REPAIRING EXISTING MAINS

- A. Trench Treatment. If during excavation the trench is either wet or filled with water, it is recommended that liberal quantities of hypochlorite tablets be applied to open trench areas to lessen the danger from pollution.
- B. The interior of all main and fittings used in making a repair shall be swabbed or sprayed with a 1 percent hypochlorite solution before they are installed.
- C. If valve and hydrant locations permit thorough flushing toward the work location from both directions, it shall be done. Flushing shall be started as soon as the repairs are completed and shall be continued until discolored water is eliminated.
- D. Slug Chlorination. Where practical and in addition to the procedures above, a section of main in which the break is located shall be isolated. All service connections shall be shut off, and the section flushed and chlorinated by the *Slug Chlorination* method. This method allows the chlorine dose to be increased to as much as 300 mg/l, and the contact time reduced to as little as 1-hour. After chlorination, the section shall be properly flushed until discolored water is eliminated and the water is free of noticeable chlorine odor.
- E. Bacteriological samples shall be taken after repairs. If the direction of flow is unknown, samples shall be taken on each side of the main break. If positive samples are recorded, daily sampling shall be continued until two consecutive negative samples are recorded.

END OF SECTION

SECTION 02755FINAL SEWER TESTINGPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Final sewer testing work includes the performance of testing and inspecting each and every length of sewer pipe, pipe joints and each item of appurtenant construction.
2. Perform testing at a time acceptable to the Engineer, which may be during the construction operations, after completion of a substantial and convenient section of the work, or after the completion of all pipe laying operations.
3. Provide all labor, pumps, pipe, connections, gages, measuring devices and all other necessary apparatus to conduct tests.

B. Related Work Specified Elsewhere (When Applicable):

1. Excavation, backfill, dewatering, pipe, pipe fittings and manholes are specified in the appropriate Sections in this Division and/or Division 15.
2. Manhole testing is specified in Section 02601 - Manholes, Covers and Frames.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION3.1 PERFORMANCE

A. General:

1. All sewers, manholes, and appurtenant work, in order to be eligible for acceptance by the Engineer, shall be subjected to tests that will determine the degree of watertightness and horizontal and vertical alignment.
2. Thoroughly clean and/or flush all sewer lines to be tested, in a manner and to the extent acceptable to the Engineer, prior to initiating test procedures.
3. Perform all tests and inspections in the presence of the Engineer and the plumbing or building inspector in accordance with the requirements of the local and state plumbing codes.
4. Perform testing by test patterns determined by or acceptable to the Engineer.
5. Remedial Work:
 - a. Perform all work necessary to correct deficiencies discovered as a result of testing and/or inspections.
 - b. Completely retest all portions of the original construction on which remedial work has been performed.

- c. Perform all remedial work and retesting in a manner and at a time acceptable to by the Engineer at no additional cost to the Owner.
- B. Line Acceptance Tests (Gravity sewers with no active service connections):
 1. Test all gravity sewer lines with no active service connections for leakage by conducting a low pressure air test.
 2. Equipment:
 - a. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
 - b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
 - c. All air used shall pass through a single central panel.
 - d. Connect 3 individual hoses:
 - (1) From the control panel to the pneumatic plugs for inflation,
 - (2) From the control panel to the sealed sewer line for introducing the low pressure air,
 - (3) From the sealed sewer line to the control panel for continually monitoring the air pressure rise in the sealed line.
 3. Testing Pneumatic Plugs:
 - a. Seal test all pneumatic plugs prior to using them in the actual test.
 - b. Lay one length of pipe on the ground and seal both ends with the pneumatic plugs to be tested.
 - c. Pressurize the sealed pipe to 5 psig.
 - d. The pneumatic plugs are acceptable if they remain in place without bracing.
 4. Testing Sewer Pipeline:
 - a. After the sewer pipe has been cleaned and the pneumatic plugs checked, place the plugs in the sewer line at each manhole and inflate them.
 - b. Introduce low pressure air into the sealed sewer pipeline until the air pressure reaches 4 psig greater than the average groundwater pressure.
 - c. Allow a minimum of 2 minutes for the air pressure to stabilize to a minimum of 3.5 psig greater than the groundwater pressure. Groundwater is assumed to be at ground surface unless the Contractor can prove by otherwise by test pitting.
 - d. After the stabilization period, disconnect the air hose from the control panel to the air supply.
 - e. The pipeline will be acceptable if the pressure decrease is not greater than 1/2 psig in the time stated in the following table for the length of pipe being tested:

<u>Pipe Diameter (inches)</u>	<u>Time (Min.) for Length of Pipe</u>			
	<u>0-100 ft</u>	<u>101-200 ft</u>	<u>201-300 ft</u>	<u>301-400 ft</u>
4	2.0	2.0	2.0	2.0
6	3.0	3.0	3.0	3.0
8	4.0	4.0	4.0	5.0

<u>Pipe Diameter (inches)</u>	<u>Time (Min.) for Length of Pipe</u>			
	<u>0-100 ft</u>	<u>101-200 ft</u>	<u>201-300 ft</u>	<u>301-400 ft</u>
10	5.0	5.0	6.0	8.0
12	5.5	5.5	8.5	11.5
15	7.0	8.5	13.0	17.0
18	8.5	12.0	19.0	25.0
21	10.0	17.5	26.0	35.0
24	11.5	23.0	34.0	45.5
27 and larger	14.5	29	43.0	58.0

6. Test Results:
 - a. If the installation fails the low pressure air test, determine the source of leakage.
 - b. Repair or replace all defective materials and/or workmanship and repeat low pressure air test at no additional cost to the Owner.
- C. Line Acceptance Tests (Gravity sewers with active services):
 1. Test all new gravity sewer lines with active services by conducting a low-pressure air test on all joints using a packer after all services have been connected or capped at the property line and all trenches backfilled but before the surface course of permanent pavement is installed.
 2. Equipment:
 - a. Closed-circuit television system.
 - b. Testing devices (packer):
 - (1) Capable of isolating individual joints by creating a sealed void space around the joint being tested.
 - (2) Constructed such that low pressure air can be admitted into the void area.
 - (3) Shall contain a pressure gauge accurate to one tenth (0.1) psi in-line with the feed line to monitor the void pressure.
 - (4) Capable of performing in sewer lines where flows do not exceed 1/4 of the pipe diameter without resorting to any method of flow control.
 3. Testing Sewer Pipeline Joints:
 - a. Test all joints except those with visible infiltration.
 - b. Procedure:
 - (1) Pull television camera through sewer line in front of the packer.
 - (2) Position the packer on each joint to be tested.
 - (3) Inflate the sleeves on each end of the packer.
 - (4) Apply four (4.0) psi pressure above the existing hydrostatic pressure on the outside of the joint to the void area created around the inside perimeter of the joint.

- (5) Shut off the supply of air once the pressure has stabilized at the required amount.
 - (6) Monitor the void pressure for thirty (30) seconds.
 - (7) Repair the joint if the pressure drops more than one half (1/2) psi in the thirty (30) seconds.
 - c. Water or chemical pressure testing may be used in lieu of air testing subject to review and approval by the Engineer.
 - d. Re-clean and re-inspect all lines not approved by the Engineer at no additional cost to the Owner.
 - e. Repairing of Joints:
 1. When a joint fails the pressure test, excavate and repair the failed joint. Repairing joints with chemical grout will not be permitted.
 - f. The Engineer may request checking of the testing equipment for accuracy.
 1. Perform standard air test on a clean continuous section of pipe.
 2. Repair the equipment if the void pressure drops.
 - g. Testing Operation Inspection:
 1. Reset each joint, as specified herein, prior to acceptance and final payment for joint testing. Retest all joints that fail until the test requirements are met.
 - h. The contractor will supply a black and white photograph of every joint that fails the pressure test.
- D. Alignment Tests (Gravity Sewers):
 1. Perform tests for the correctness of horizontal and vertical alignment on each and every length of gravity sewer pipeline between manholes.
 2. Alignment tests to be conducted after all pipe has been installed and backfilled.
 3. The observation test shall be conducted after all upstream work has been completed and the pipeline cleaned of debris.
 4. Notify the Engineer at least 24 hours in advance of the proposed observation testing.
 5. Introduce water into the sewer lines to be tested from the upstream manhole prior to the observation test but no more than 24 hours in advance of the test.
 6. Beam a source of light, acceptable to the Engineer, through the pipeline from both ends and the Engineer will directly observe the light in the downstream, and/or upstream manhole of each test section.
 7. The length of pipe between manholes, diameter of pipe and amount of light observed in the manhole at the end of each pipe section will determine acceptance of the alignment test by the Engineer.
 8. The amount of vertical and horizontal deflection shall not be greater than the ASTM allowance and (manufacturer's recommendations) for the pipe being tested.
 9. No standing water shall be allowed. The presence of standing water shall be cause for rejection of that pipe (including manhole) section.
 10. Improper alignment will be corrected by re-excavation and resetting of pipe at no additional cost to the Owner.

E. Pipe Deflection: (Gravity Sewers)

1. Pipe provided under this specification shall be installed so there is no more than a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (normal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
2. The Contractor shall wait a minimum of 30 days after completion of a section of sewer, including placement and compaction of backfill, before measuring the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer.
3. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.

F. Television Inspection Tests (Gravity Sewers)

1. Where television inspection testing is required, test procedures shall be in compliance with the requirements outlined in Specification Section 02753.
2. No standing water shall be allowed. The presence of standing water may be cause for rejection of that pipe.
3. Any standing water, detectable leaks, improper joints or any other unacceptable feature detected by the television inspection will be corrected by re-excavation and resetting pipe at no additional cost to the Owner.

G. Inspection of Appurtenant Installations:

1. Completely inspect, at a time determined by the Engineer, all manholes and inlets to ascertain their compliance with the Drawings and Specifications.
2. Provide access to each manhole and inlet and check the following characteristics:
 - a. Shape and finish of invert channels,
 - b. Watertightness and finish of masonry structures,
 - c. Location, type, and attachment of stops,
 - d. Elevation and attachment of frames, covers, and openings,
 - e. Pattern and machining of covers, and
 - f. Drop connection arrangements.

H. Testing Pressure Sewers:

1. The section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations backfilling and taps at such points and shall plug said holes after completion of the test.
2. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
3. Perform pressure and leakage test at 1-½ times the maximum system pressure or 100 psi which ever is greater (based on the elevation of the lowest point of the section under test and corrected to the gage location).
4. While maintaining this pressure, the Contractor shall make a leakage test by metering the flow of water into the pipe. If the average leakage during a two-hour period exceeds a rate of 10 gallons per inch of diameter per 24 hours per mile of

pipeline the section shall be considered as having failed the test. All joints within chambers and all flanged joints shall have no visible leakage.

5. If the section fails to pass the pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, or joint, all at his own expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test.
- I. Manhole Leakage Testing:
 1. Specified in the "Manholes, Covers and Frames" Section in Division 2.

END OF SECTION

DIVISION 3CONCRETE WORKScope of Work

Provide, install and test all site work and appurtenant work in complete accordance with the Drawings and Specifications.

Contractor's Duties

Except as specifically noted, provide and pay for all labor, materials, equipment, tools, machinery, water, heat, other facilities and services necessary for proper execution and completion of work.

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END OF SECTION

SECTION 03319PRE-CAST CONCRETE THRUST BLOCKSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish and install pre-cast concrete thrust blocks for pipes in the location(s) and of the dimension(s) and shapes shown on the Drawings, as directed by the Engineer and as required to rigidly support pipes.
- B. The Contractor shall provide pre-cast concrete thrust blocks, if cast-in-place thrust blocks are not used as indicated on the drawings.

1.2 QUALITY ASSURANCE

- A. Acceptable Manufacturers:
 - 1. Superior Concrete, Auburn, ME
 - 2. American Concrete, Bangor, ME
 - 3. Or approved equal.

1.3 SUBMITTALS

- A. Submit dimensioned drawings for each type of thrust block required, as indicated on the drawings.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Thrust blocks shall be manufactured of 2,000 psi concrete or greater.

PART 3 - EXECUTION3.1 INSTALLATION

- A. Thrust blocks shall be installed as shown on the Drawings, to secure pipe and fittings and properly compacted as specified.
- B. Secure pipe to prevent movement and floatation during the placement of the concrete.

END OF SECTION

SECTION 03420

PRECAST CONCRETE STRUCTURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Precast concrete structures. Provide a precast concrete vault for the pressure reducing valve station.
- B. Joint sealants.
- C. Waterproofing.

1.2 RELATED SECTIONS

- A. Section 01340 - Submittals
- B. Section 02200 - Earthwork
- C. Section 03300 - Cast-in-Place Concrete

1.3 REFERENCES

- A. ACI 308-92 - Revised 1992 - Standard Practice for Curing Concrete
- B. ACI 318-99 - Building Code Requirements for Structural Concrete and Commentary
- C. ACI 350R-89 - Environmental Engineering Concrete Structures
- D. ASTM A82-97a - Specification for Steel Wire, Plain, for Concrete Reinforcement
- E. A185-97 - Specification for Steel Welded Wire Fabric, Plain for Concrete Reinforcement
- F. ASTM A615/A615M-00 - Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement
- G. ASTM C33/C94M-00 - Specification for Concrete Aggregates
- H. ASTM C94-00 - Specification for Ready Mixed Concrete
- I. ASTM C150-99a - Specification Portland Cement
- J. ASTM C260-00 - Specification for Air Entraining Admixtures for Concrete
- K. ASTM C309-98a - Specification for Liquid Membrane-Forming Compounds for Curing Concrete
- L. ASTM C494/C494M-99a - Specification for Chemical Admixtures for Concrete
- M. Concrete Reinforcing Steel Institute - Manual of Standard Practice
- N. Concrete Reinforcing Steel Institute - Placing Reinforcing Bars

1.4 DESIGN REQUIREMENTS

- A. Design shall be for "Normal Sanitary Exposure" (Z=115) and shall be done by "Alternate Design Method" ACI 318, Appendix B or "Strength Design Method" ACI 318 and as amended by ACI 350R.
- B. Minimum 28 day compressive strength: $f'_c = 5,000$ psi.

- C. Reinforcing Steel: ASTM A615 grade 60 deformed bars.
- D. Concrete cover on reinforcing steel: 1½ inches minimum.
- E. The structures shall have a minimum of 8" thick walls, top slabs and base slabs.
- F. The precast concrete structure shall support its own weight plus the following minimum superimposed loads:
 - 1. Live load on top slab: H-20 vehicular loading.
 - 2. Equivalent lateral fluid pressure - 90 PCF. The top of the pressure diagram shall be assumed to originate at Finish Grade as shown on the drawings.
 - 3. Uniform live load surcharge of 125 psf applied horizontally to the sides of the precast structure.
 - 4. Ground water shall be assumed to originate at finish grade.
 - 5. Factor of safety of 1.15 shall be used against flotation based on weights of empty structure and soil directly over footing extensions.
- G. Segmented structures with joints shall be designed and installed for watertight joints with no leakage at the joints.

1.5 SUBMITTALS

A. Manufacturer's Data:

- 1. Submit manufacturer's specifications and instructions for all manufactured materials and products. Include manufacturer's certifications and laboratory test reports as required.
- 2. Contractor shall submit the proposed erection procedure for precast units, sequence of erection, and required handling equipment.
- 3. A copy of handling and installation instructions and procedures shall be transmitted to the Erector.

B. Shop Drawings:

- 1. Submit shop drawings showing complete information for the fabrication and installation of precast concrete units.
- 2. Submit member dimensions and cross section, location, size, type and details of reinforcement, including special reinforcement and lifting devices necessary for handling and erection, joints and waterstops.
- 3. Submit layout, dimensions, and identification of each precast unit corresponding to the sequence and procedure of installation. Indicate welded connections by AWS standard symbols. Detail inserts, connections, and joints, including accessories and construction at opening in precast units.
- 4. Submit location and details of anchorage devices that are to be embedded in other construction. Furnish templates if required for accurate placement.
- 5. Submit structural design calculations and drawings demonstrating the structural integrity of all precast concrete units for the intended use and a buoyancy analysis with a factor of safety against flotation of 1.15 with the assumptions of the ground water table at finished grade and the precast concrete tank empty. Calculations and Drawings shall be prepared and stamped by a Professional Engineer registered in the State of Maine.
- 6. Submit concrete mix design including product data for concrete accessories and waterproofing materials.

7. Submit locations of wall penetrations for pipes. All openings shall be cast-in-place at the manufacturing plant. No field coring of pipe penetrations shall be allowed.

1.6 QUALITY ASSURANCE

- A. The manufacture shall exhibit satisfactory performance on projects of similar magnitude under similar or equal service conditions for a period not less than five (5) years. Submit past job list with Owner contact information.

1.7 WARRANTY

- A. The precast concrete manufacturer shall guarantee all precast concrete members against excessive movement after erection, causing separation of joints, cracking or misalignment of adjacent units. The Precaster shall further guarantee all joints between concrete sections against leakage and all members against infiltration of water through the concrete; the precast concrete erector shall repair and restore any unsatisfactory conditions or damage to the building resulting from and related to the precast concrete work, to the extent of replacement if so required at no expense to the Owner.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver precast concrete units to the project site in such quantities and at such times as will assure the continuity of the installation.
- B. Store units at the project site to ensure against cracking, distortion, staining, or other physical damage, and so that markings are visible. Lift and support units at the designated lift points only.

1.9 JOB CONDITIONS

- A. Erector must examine all parts of the supporting structure and the conditions under which the precast concrete work is to be erected, and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the installation until satisfactory conditions have been corrected in a manner acceptable to the Erector.
- B. Deliver anchorage items which are to be embedded in other construction before the start of such work. Provide setting diagrams, templates, instructions and directions as required for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Superior Concrete Company, Inc., Auburn, Maine.
- B. Scituate/Ray Precast Concrete Products, Marshfield, MA.
- C. Rotondo Precast Concrete Products, Rehobath, MA.
- D. Or equivalent.

2.2 MATERIALS

- A. Cement for all units shall be Type II Portland cement, ASTM C150.
- B. Minimum compressive strength of concrete 5000 psi at 28 days.

- C. Entrained air content of concrete: $6\% \pm 1\%$.
- D. Reinforcing steel shall conform to ASTM A 615 grade 60 deformed bars.
- E. Cast-in-place plates shall conform to ASTM A 36.
- F. Liquid Asphalt Dampproofing: Non-fibrated asphalt emulsion for below grade wall dampproofing.
 - 1. First coat Sonneborn Building Products - Hydrocide 600 or equal.
 - 2. Second coat Sonneborn Building Products - Hydrocide 700 Mastic, or equal.
- G. Precast section joints shall use solid, continuous elastomeric gaskets to achieve watertight joints.

PART 3 - EXECUTION

3.1 FABRICATION AND PLACING REINFORCEMENT

- A. Detailing and fabrication of reinforcement shall conform to details on drawings, and otherwise to the CRSI Code of Standard Practice.
- B. Bars when placed shall be clean and free from loose mill scale and rust and from coatings that reduce bond.
- C. Place reinforcement of structural members on accessory bolsters and chairs as specified in Specification Section 03300, for reinforcement of cast-in-place structural members. Accessories shall be stainless steel or have plastic tips.
- D. Specifications for splicing bars given in the ACI Code are applicable to this work.
- E. All reinforcing shall have adequate cover as required by ACI 318 and 350R.

3.2 PRODUCTION AND CURING

- A. Production and curing of the precast units shall in all respects conform to the provisions of ACI Standards.
- B. Each precast concrete unit shall be an integral placement without any construction or cold joints. Floor slabs shall be an integral placement with the bottom wall section.
- C. Structures shall be fabricated from the minimum number of precast sections while keeping with transportation and installation restrictions.

3.3 STORAGE, HANDLING, TRANSPORTATION

- A. Units shall be stored in moist condition for at least 14 days and shall be supported in such a way as to avoid any deformation, discoloration, or permanent set. Handling and transportation shall not produce stresses beyond the allowable stresses or cause cracks and spalls.

3.4 CONDITIONS OF UNITS AND PATCHING

- A. Damaged, cracked, or chipped units shall be satisfactorily repaired and patched if structurally and architecturally acceptable. The Engineer shall be sole judge as to acceptability and his decision shall be final if made within these specifications. The Precasters assumes responsibility for any damage or impairment of the precast units until the unit is erected and permanently fastened. All exposed to view units to be cleaned to obtain a uniform finish before acceptance is made.

3.5 INSPECTION

- A. Material and workmanship shall be at all times subject to inspection by the Engineer and ready access for such inspection shall be permitted to all work during fabrication and erection.
- B. Material and workmanship not in conformity with the provisions of this specification may be rejected at any time defects are found during the progress of the job.

3.6 EMBEDDED AND ATTACHED ITEMS

- A. Pipe sleeves, inserts, bolts, lifting hooks dowels, and all other items required for transportation and erection shall be patched so that they shall have adequate concrete cover in the finished structure. Location to be as shown on Drawings or as required for handling and erection.

3.7 ERECTION

- A. Install all precast structures and/or structure sections level and plumb to the elevations and in the locations shown on the Drawings.
- B. Installation Tolerances: Install precast units without exceeding the following tolerance limits:
 - 1. Variations from Plumb: 1/4" in any 20' run or story height ; 1/2" total in any 40' or longer run.
 - 2. Variations from Level or Elevation: 1/4" in any 20' run; 1/2" in any 40' run; total plus or minus 1/2" at any location.
 - 3. Variation from Theoretical Position in Plan: Plus or minus 1/4" maximum at any location.
 - 4. Offsets in Alignment of Adjacent Members at Any Joint: 1/16" in any 10' run: 1/4" maximum.
- C. Perform jointing in strict accordance with the manufacturer's recommendations.
- D. Make sure all joints are watertight.

3.8 CLEANING, REPAIRING AND PROTECTION

- A. After erection is complete, any chipped or damaged units and any depressions left by removal of lifting devices shall be properly repaired by the erector. Also, all erection dirt incurred during the erection process shall be removed. Muriatic acid or similar products are not to be used without the specific consent of the manufacturer and the Engineer.
- B. All finished work in any way exposed shall be protected by the General Contractor against damage. Cutting and patching of any precast concrete shall only be allowed with the express permission of the Engineer. Any such work shall only be done by the Erector, either at this own expense should the fault be his, or at the expense of the party responsible for the damage for the additional work required.

3.9 LIQUID ASPHALT DAMPPROOFING APPLICATION

- A. Apply dampproofing to all concrete tank walls below grade.
- B. First Coat - Brush or spray on at a rate of 125-150 square feet per gallon, filling all voids in concrete surfaces, completely.
- C. Allow first coat to dry before applying second coat.

- D. Second Coat - Trowel apply at a rate of 20-25 square feet per gallon.
- E. Do not place backfill for at least 24 to 48 hours after application.

3.10 CLEANING

- A. Clean any adjacent materials effected by the application of the penetrating dampproofing with a material recommended by the dampproofing manufacturer.

3.11 TESTING

- A. General:
 - 1. Perform leakage tests on all precast concrete tanks.
 - 2. All testing must be performed in the presence of the Engineer.
 - 3. Suitably plug all pipes entering precast concrete tank and brace plugs to prevent blow out.
- B. Exfiltration Tests Prior to Backfilling:
 - 1. Fill precast concrete tank with potable water furnished by the Contractor to the top of the cover.
 - 2. A period of up to 12 hours may be permitted, if the Contractor so wishes, to allow for absorption.
 - 3. At the end of the absorption period, refill precast concrete tank with water to the top of the precast concrete tank cover and begin the 4-hour test period.
 - 4. At the end of the 4-hour test period, refill precast concrete tank to the top of the precast concrete tank cover and measure the volume of water added. The leakage for each precast concrete tank shall not exceed 1 gallon per 50 square feet of tank wall per 4-hour period.

3.12 PRECAST CONCRETE TANK REPAIRS

- A. Correct leakage by reconstruction, replacement of gaskets and/or other methods as approved by the Engineer.
- B. The use of lead-wool or expanding mortar will not be permitted.
- C. Subsequent to the repair, tanks shall be refilled as previously described and re-tested until such time as the structures can demonstrate compliance with the testing requirements and at no additional cost to the Owner.
- D. The Contractor shall dispose of the water as directed by the Engineer.

END OF SECTION

Permits & Cultural Resources Unit

Summary Sheet

PIN #: **1853.30** Town: **Farmingdale**
 Permit Member: **J Nichols**
 ENV Coordinator and Date submitted to ENV Coordinator:
 Database/Projex ☒

☒ Section 106 and Tribal Consultation

Architectural Resources	PA <input type="checkbox"/> Applicable <input checked="" type="checkbox"/>	Approved <input checked="" type="checkbox"/>
Archeological Resources	PA <input type="checkbox"/> Applicable <input checked="" type="checkbox"/>	Approved <input checked="" type="checkbox"/>
Tribal Consultation	Tribal Letters Sent <input type="checkbox"/>	Approved <input type="checkbox"/>

☒ 4(f) and 6(f)

<u>Section 4(f)</u>	Are there Right of Way Takes or Easements on Public Park Property	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Are there Right of Way Takes or Easements on Public Recreational Property	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Are there Right of Way Takes or Easements on Public Wildlife/ Waterfowl Refuge Property	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Are there Right of Way Takes or Easements on Historic Eligible or Listed Property	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Are there Right of Way Takes or Easements on Property within a Historic District	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Has MHPC Determined an Adverse Effect	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Is a Programmatic or Full 4(f) Document Required	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	FHWA Concurrence/Approval <input checked="" type="checkbox"/>	

LAWCON 6(f) N/A ☒ Applicable ☐ Approved ☐

☒ **FEMA** GIS Floodplains Checked ☒ N/A ☐ Applicable ☐

☒ Maine Department of Inland Fisheries and Wildlife (MDIFW) Essential Habitat

GIS Essential Habitats Checked <input type="checkbox"/>	
Eagle Nest	N/A <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Approved <input type="checkbox"/>
Piping Plover	N/A <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Approved <input type="checkbox"/>
Roseate Tern	N/A <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Approved <input type="checkbox"/>

☒ **Maine Department of Conservation/ Public Lands, Submerged Land Lease** N/A ☒ Applicable ☐

☒ Land Use Regulation Commission (LURC) ☒ Not Applicable

No permit	<input type="checkbox"/>	
Notice	<input type="checkbox"/>	Approved <input type="checkbox"/>
Permit	<input type="checkbox"/>	Approved <input type="checkbox"/>

☒ Maine Department of Environmental Protection (MDEP) Site Location of Development

N/A ☒ Applicable ☐ Approved ☐

☒ Maine Department of Environmental Protection (MDEP), Natural Resource Protection Act

No permit required	<input type="checkbox"/>	
Exempt	<input type="checkbox"/> (Must use erosion and sediment control and not block fish passage.)	
PBR	<input checked="" type="checkbox"/>	Approved <input checked="" type="checkbox"/>
Tier 1	<input type="checkbox"/>	Approved <input type="checkbox"/>
Tier 2	<input type="checkbox"/>	Approved <input type="checkbox"/>
Individual	<input type="checkbox"/>	Approved <input type="checkbox"/>

☒ Army Corps of Engineers (ACOE), Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

No permit required	<input type="checkbox"/>	
Category 1-NR	<input checked="" type="checkbox"/>	Approved <input checked="" type="checkbox"/>
Category 2	<input type="checkbox"/>	Approved <input type="checkbox"/>
Category 3	<input type="checkbox"/>	Approved <input type="checkbox"/>

☒ IN-STREAM TIMING RESTRICTIONS: **105 Special Provision** ☒ n/a ☐

Dates instream work is allowed: **7/15 – 10/1**

☒ Special Provision 656, Erosion Control Plan

*Boxes marked in red indicate items that are attached and need to be placed in the contract by the Project Manager.

DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)
PERMIT BY RULE NOTIFICATION FORM
(For use with DEP Regulation, Chapter 305)

■ MDOT PIN: 1853.30

Name of Applicant: State of Maine Department of Transportation Name of Contact: David Gardner
Mailing Address: 16 Station State House Town/City: Augusta State: Me. Zip Code: 04330-0016
Daytime Telephone #: (207)-624-3105 Name of Wetland, Water Body or Stream: unnamed streams

Detailed Directions to Site: This project is on Route 201, beginning at Clark Street and extending 0.94 miles to Maple Street.

Town/City: Farmingdale

Map #: N/A

Lot #: N/A

County: Kennebec

Description of Project: This is a highway improvement project to improve sight distance and safety. Culvert replacements or extensions are planned at unnamed streams. The project will be performed in accordance with erosion control measures conforming with the latest versions of the *State of Maine Department of Transportation Standard Specifications for Highways and Bridges* and the *Department of Transportation's Best Management Practices for Erosion and Sediment Control*.

Part of a larger project? ☐ Yes ☒ No

(CHECK ONE) This project... ☒ does ☐ does not ...involve work below mean low water.

I am filing notice of my intent to carry out work which meets the requirements for Permit By Rule (PBR) under DEP Regulation, Chapter 305. I have a copy of PBR Sections checked below. I have read and will comply with all of the standards.

- | | | |
|---|---|---|
| <input type="checkbox"/> Sec. (2) Soil Disturbance | <input type="checkbox"/> Sec. (8) Shoreline stabilization | <input type="checkbox"/> Sec. (14) Piers, Wharves & Pilings |
| <input type="checkbox"/> Sec. (3) Intake Pipes | <input type="checkbox"/> Sec. (9) Utility Crossing | <input type="checkbox"/> Sec. (15) Public Boat Ramps |
| <input type="checkbox"/> Sec. (4) Replacement of Structures | <input type="checkbox"/> Sec. (10) Stream Crossing | <input type="checkbox"/> Sec. (16) Coastal Sand Dune Projects |
| <input type="checkbox"/> Sec. (5) REPEALED | <input checked="" type="checkbox"/> Sec. (11) State Transport. Facilities | <input type="checkbox"/> Sec. (17) Transfers/Permit Extension |
| <input type="checkbox"/> Sec. (6) Movement of Rocks or Vegetation | <input type="checkbox"/> Sec. (12) Restoration of Natural Areas | <input type="checkbox"/> Sec. (18) Maintenance Dredging |
| <input type="checkbox"/> Sec. (7) Outfall Pipes | <input type="checkbox"/> Sec. (13) F&W Creation/Enhance/Water Quality Improvement | |

I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules. I also understand that **this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.**

I have attached all of the following required submittals. **NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:**

- A \$55 (non-refundable) payment shall be done by internal billing.
- Attach a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.
- ☐ Attach photographs showing existing site conditions (unless not required under standards).

Signature of Applicant: _____

John E. Dority, Chief Engineer

Date: _____

10/21/04

Keep the bottom copy as a record of permit. Send the form with attachments via certified mail to the Maine Dept. of Environmental Protection **at the appropriate regional office listed below.** The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Permits are valid for two years. **Work carried out in violation of any standard is subject to enforcement action.**

AUGUSTA DEP STATE HOUSE STATION 17 AUGUSTA, ME 04333-0017 (207)287-2111 PORTLAND DEP 312
CANCO ROAD PORTLAND, ME 04103 (207)822-6300 BANGOR DEP 106 HOGAN ROAD BANGOR, ME
04401 (207)941-4570 PRESQUE ISLE DEP 1235 CENTRAL DRIVE PRESQUE ISLE, ME 04769 (207)764-0477

OFFICE USE ONLY
PBR # FP

Ck.#

Date

Staff

Acc. Date

Staff

Def. Date

After Photos

Chapter 305: PERMIT BY RULE Section 11
State Transportation Facilities

- 1. Introduction.** A "permit by rule" or "PBR", when approved by the Department of Environmental Protection (DEP), is an approval for an activity that requires a permit under the Natural Resources Protection Act (NRPA). Only those activities described in this chapter may proceed under the PBR process. A PBR activity will not significantly affect the environment if carried out in accordance with this chapter, and generally has less of an impact on the environment than an activity requiring an individual permit. A PBR satisfies the Natural Resources Protection Act (NRPA) permit requirement and Water Quality Certification requirement.

If a proposed activity is not described in this chapter, or will not be conducted in accordance with the standards of this chapter, the applicant must obtain an individual permit prior to beginning the activity.

- A. Location of activity.** The location of an activity may affect whether an activity qualifies for PBR, and whether review by the Department of Inland Fisheries and Wildlife is required.

- (1) Type of resource. For some types of activities, the availability of a PBR is affected by the type of natural resource in or adjacent to which the activity is proposed. For example, an applicant proposing an activity consisting of "Movement of rocks or vegetation" may receive a PBR only if the activity will take place in a great pond, river, stream or brook. Limitations concerning the location of activities are addressed in the "Applicability" provision in each section of this chapter.
- (2) Essential habitat. Essential habitats include areas critical to the survival of threatened and endangered species such as the bald eagle, least tern, roseate tern, and piping plover. If the activity is located in essential habitat, such as near an eagle nesting site, a PBR is only available if the applicant obtains written approval from the Department of Inland Fisheries and Wildlife (IF&W). This approval from IF&W must be submitted to the DEP with the PBR notification form, and the applicant must follow any conditions stated in the IF&W approval.

NOTE: Maps showing areas of essential habitat are available from the Department of Inland Fisheries and Wildlife regional headquarters, municipal offices, the Land Use Regulation Commission (for unorganized territories) and DEP regional offices. If the activity is located in essential habitat, IF&W must be contacted to request and obtain a "certification of review and approval".

- B. Notification.** The applicant must file notice of the activity with the DEP prior to beginning work on the activity. The notification must be on a form provided by the DEP and must include any submissions required in this chapter. The applicant must keep a copy to serve as the permit.

The notification form must be sent to the DEP by certified mail (return receipt requested), or hand delivered to the DEP and date stamped by the department.

C. Effective period

- (1) Beginning of period. The PBR becomes effective 14 calendar days after the DEP receives the notification form, unless the DEP approves or denies the PBR prior to that date. If the DEP does not speak with or write to the applicant within this 14 day period regarding the PBR notification, the applicant may proceed to carry out the activity.

There are three exceptions regarding the effective date of an approved PBR:

- (a) Activities listed in Section 10 (Stream crossings) occurring in association with forest management are exempt from the 14 day waiting period.
- (b) Activities listed in Section 2 (Soil disturbance) and Section 10 (Stream crossings) performed or supervised by individuals currently certified in erosion control practices by the DEP are exempt from the 14 day waiting period. To be certified in erosion control practices, an individual must successfully complete all course requirements of the Voluntary Contractor Certification Program administered by the DEP's Nonpoint Source Training and Resource Center.
- (c) Activities that are part of a larger project requiring a permit under the Site Location of Development or the Storm Water Management Acts may not proceed until any required permit under those laws is obtained.

NOTE: Activities that are part of a larger project may require other permits from the DEP also. These other laws may prohibit the start of construction of any part of the project unless a permit under that law is obtained. In these cases, while not a violation of this rule, starting work on a PBR approved activity would be a violation of those other applicable laws.

- (2) End of period. The PBR is generally effective for 2 years from the date of approval, except that a PBR for "Replacement of structures" under Section 4 is effective for 3 years.

NOTE: Activities that qualify under this chapter may need to meet other local, state and federal requirements. Examples -- (1) If an activity extends below the low water line of a lake, coastal wetland or international boundary water, the applicant should contact the Bureau of Parks and Lands (287-3061) concerning possible lease or easement requirements, or (2) If an activity will involve work below the mean high water line in navigable waters of the United States, the applicant should contact the Army Corps of Engineers (623-8367).

D. Discretionary authority. Notwithstanding compliance with the PBR applicability requirements and standards set forth in this chapter, the DEP may require an individual permit application to be filed in any case where credible evidence indicates that the activity:

- (1) May violate the standards of the NRPA (38 M.R.S.A. Section 480-D);
- (2) Could lead to significant environmental impacts, including cumulative impacts; or
- (3) Could adversely impact a resource of special concern.

If an individual permit is required pursuant to this subsection, the DEP shall notify the applicant in writing within the 14 calendar day waiting period described in sub-section (C) above. When the DEP notifies an applicant that an individual permit is required, no work may be conducted unless and until the individual permit is obtained.

E. Violations. A violation of law occurs when a person, or his or her agent, performs or causes to be performed any activity subject to the NRPA without first obtaining a permit from the DEP, or acts contrary to the provisions of a permit. The person, his or her agent, or both, may be held responsible for the violation. Commonly, the "person" is the landowner, and the "agent" is the contractor carrying out the activity. A violation occurs when:

- (1) An activity occurs that is not allowed under PBR, whether or not a PBR notification form has been filed with and/or approved by the DEP;
- (2) An activity occurs that is allowed under PBR, but a PBR for the activity has not become effective prior to the beginning of the activity; or
- (3) An activity occurs that is allowed under PBR and a PBR for the activity is in effect, but the standards specified in this chapter are not met.

See the "applicability" provision under each activity for rules concerning what activities are allowed under PBR. A PBR is only valid for the person listed on the notification form, or for his or her agent.

Each day that a violation occurs or continues is considered a separate offense. Violations are subject to criminal penalties and civil penalties of not less than \$100 nor more than \$10,000 for each day of that violation (38 M.R.S.A. Section 349).

NOTE: A local Code Enforcement Officer (CEO) may take enforcement action for a violation of the Natural Resources Protection Act if he or she is authorized to represent a municipality in District Court, and he or she has been certified as familiar with court procedures, 30-A M.R.S.A. Section 4452(7).

Chapter 305 Section 11**State transportation facilities****A. Applicability**

- (1) This section applies to the maintenance, repair, reconstruction, rehabilitation, replacement or minor construction of a State Transportation Facility carried out by, or under the authority of, the Maine Department of Transportation or the Maine Turnpike Authority, including any testing or preconstruction engineering, and associated technical support services.
- (2) This section does not apply to an activity within a coastal sand dune system.

NOTE: The construction of a transportation facility other than roads and associated facilities may be subject to the Storm Water Management Law, 38 M.R.S.A. Section 420-D.

B. Standards

- (1) Photographs of the area to be altered by the activity must be taken before work on the site begins. The photographs must be kept on file and be made available at the request of the DEP.
- (2) The activity must be reviewed by the Department of Inland Fisheries and Wildlife, the Department of Marine Resources, the Atlantic Salmon Authority, and the DEP's Division of Environmental Assessment prior to the notification being filed with the DEP. The activity must be performed according to any recommendations from these authorities.
- (3) The activity must be performed in accordance with erosion control measures conforming with the State of Maine Department of Transportation Standard Specifications for Highways and Bridges Revision of April 1995 and with the Department of Transportation's Best Management Practices for Erosion and Sediment Control, September 1997.

NOTE: Guidance on the use of erosion control best management practices can be obtained from the on site Construction Manager.

- (4) Alignment changes may not exceed a distance of 200 feet between the old and new center lines in any natural resource.
- (5) The activity may not alter more than 300 feet of shoreline (both shores added together) within a mile stretch of any river, stream or brook, including any bridge width or length of culvert.
- (6) The activity may not alter more than 150 feet of shoreline (both shores added together) within a mile stretch of any outstanding river segment identified in 38 M.R.S.A. 480-P, including any bridge width or length of culvert.
- (7) The activity must minimize wetland intrusion. The activity is exempt from the provisions of Chapter 310, the Wetland Protection Rules, if the activity alters less than 15,000 square feet

of natural resources per mile of roadway (centerline measurement) provided that the following impacts are not exceeded within the 15,000 square foot area:

- (a) 1,000 square feet of coastal wetland consisting of salt tolerant vegetation or shellfish habitat; or
- (b) 5,000 square feet of coastal wetland not containing salt tolerant vegetation or shellfish habitat; or
- (c) 1,000 square feet of a great pond.

All other activities must be performed in compliance with all sections of Chapter 310, the Wetland Protection Rules, except 310.2(C), 5(A), 9(1), 9(B) and 9(C).

- (8) The activity may not permanently block any fish passage in any watercourse containing fish. The applicant must improve passage beyond what restriction may already exist unless the Department of Inland Fisheries and Wildlife, the Department of Marine Resources, the Atlantic Salmon Authority and the DEP's Division of Environmental Assessment concur that the improvement is not necessary.
- (9) Rocks may not be removed from below the normal high water line of any coastal wetland, freshwater wetland, great pond, river, stream or brook except to the minimum extent necessary for completion of work within the limits of construction.
- (10) If work is performed in a river, stream or brook that is less than three feet deep at the time and location of the activity, with the exception of culvert installation, the applicant must divert flow away from the activity while work is in progress.
 - (a) Diversion may be accomplished by the use of stable, inert material. No more than two thirds ($2/3$) of stream width may be diverted at one time.
 - (b) Any material used to divert water flow must be completely removed upon completion of the activity, and the stream bottom must be restored to its original condition.
 - (c) A pump may be operated, where necessary, for a temporary diversion. The pump outlet must be located and operated such that erosion or the discharge of sediment to the water is prevented.

NOTE: Guidance on the appropriate location of a diversion and materials which should be used for a stream diversion can be obtained from the on site Construction Manager.

- (11) Wheeled or tracked equipment may not operate in the water. Equipment operating on the shore may reach into the water with a bucket or similar extension. Equipment may cross streams on rock, gravel or ledge bottom.
- (12) All wheeled or tracked equipment that must travel or work in a vegetated wetland area must travel and work on mats or platforms.

- (13) Any debris or excavated material must be stockpiled either outside the wetland or on mats or platforms. Hay bales or silt fence must be used, where necessary, to prevent sedimentation. Any debris generated during the activity must be prevented from washing downstream and must be removed from the wetland or water body. Disposal of debris must be in conformance with the Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Section 1301 et seq.
- (14) Work below the normal high water line of a great pond, river, stream or brook must be done at low water except for emergency work or work agreed to by the resource agencies listed in paragraph 2 above. Measures, such as a silt boom or staked fencing, must be employed to reduce and isolate turbidity.
- (15) Perimeter controls must be installed before the work starts. Disturbance of natural resources beyond the construction limits shown on the plans is not allowed under this rule.

NOTE: Guidance on the location of construction limits can be obtained from the on site Construction Manager.

- (16) The use of untreated lumber is preferred. Lumber pressure treated with chromated copper arsenate (CCA) may be used, provided it is cured on dry land in a manner that exposes all surfaces to the air for a period of at least 21 days prior to construction. Wood treated with creosote or pentachlorophenol may not be used where it will contact water.
- (17) A temporary road for equipment access must be constructed of crushed stone, blasted ledge, or similar materials that will not cause sedimentation or restrict fish passage. Such roads must be completely removed at the completion of the activity. In addition, any such temporary roads which are in rivers, streams or brooks, must allow for a passage of stormwater flows associated with a 10-year storm.
- (18) Soil may not be disturbed during any period when soils are saturated due to rain or snow melt, except as necessary to protect work in progress or as required for bridge maintenance activities. Areas where soils are saturated (i.e. water drips from the soil when squeezed by hand, or the soil is capable of being rolled into a rod 1/8th inch in diameter that does not crumble) must be immediately mulched if they are disturbed.
- (19) Disturbed soil must be protected within one week from the time it was last actively worked, and prior to any storm event, using temporary or permanent measures such as the placement of riprap, sod, mulch, erosion control blankets, or other comparable measures.
- (20) Hay bale or straw mulch, where used, must be applied at a rate of at least one bale per 500 square feet (1 to 2 tons per acre).
- (21) If mulch is likely to be moved because of steep slopes or wind exposure, it must be anchored with netting, peg and twine, binder or other suitable method and must be maintained until a catch of vegetation is established over the entire disturbed area.
- (22) In addition to the placement of riprap, sod, erosion control blankets or mulch, additional steps must be taken where necessary to prevent sedimentation of the water. Evidence of sedimentation includes visible sheet, rill or gully erosion, discoloration of water by

suspended particles and/or slumping of banks. Silt fences, staked hay bales and other sedimentation control measures, where planned for, must be in place prior to the commencement of an activity, but must also be installed whenever necessary to prevent erosion and sedimentation.

NOTE: Guidance on the location and proper installation of erosion control measures can be obtained from the on site Construction Manager.

- (23) Temporary erosion control measures must be maintained and inspected weekly until the site is permanently stabilized with vegetation or other permanent control measures. Erosion control measures must also be inspected immediately prior to and following storms.
- (24) Permanent erosion control measures protecting all disturbed areas must be implemented within 30 days from the time the areas were last actively worked, or for fall and winter activities by the following June 15, except where precluded by the type of activity (e.g. riprap, road surfaces, etc.). The permanent erosion control measures must be maintained.
- (25) The applicant shall immediately take appropriate measures to prevent erosion or sedimentation from occurring or to correct any existing problems, regardless of the time of year.
- (26) Non-native species may not be planted in restored areas.
- (27) Disposal of debris must be in conformance with Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Sections 1301 et seq.
- (28) Disturbance of vegetation must be avoided, if possible. Where vegetation is disturbed outside of the area covered by any road or structure construction, it must be reestablished immediately upon completion of the activity and must be maintained.
- (29) A vegetated area at least 25 feet wide must be established and maintained between any new stormwater outfall structure and the high water line of any open water body. A velocity reducing structure must be constructed at the outlet of the stormwater outfall that will create sheet flow of stormwater, and prevent erosion of soil within the vegetated buffer. If the 25 foot vegetated buffer is not practicable, the applicant must explain the reason for a lesser setback in writing. Approval from the DEP must be in writing and any recommendations must be incorporated into the activity.

C. Definitions. The following terms, as used in this chapter, have the following meanings, unless the context indicates otherwise:

- (1) Diversion. A rerouting of a river, stream or brook to a location outside of its established channel.
- (2) Fill. a. (verb) To put into or upon, supply to, or allow to enter a water body or wetland any earth, rock, gravel, sand, silt, clay, peat, or debris; b. (noun) Material, other than structures, placed in or immediately adjacent to a wetland or water body.

- (3) Floodplain wetlands. Freshwater wetlands that are inundated with flood water during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Agency or other site specific information.
- (4) Riprap. Rocks that are fit into place, usually without mortar, on a slope as defined in the State of Maine, Department of Transportation, Standard Specifications for Highway and Bridges, revision of April 1995.

Project Information for Army Corps of Engineers Programmatic General Permit**Applicant: Maine Department of Transportation****Contact Person: Josh Nichols 624-3092**

PIN: 1853.30

Location: Farmingdale

Scope: Highway reconstruction

Date: 10/10/04

Army Corps of Engineers Permit Level☒ Category I (non-reporting)

- ☒ < 4,300 s.f. inland wetland impacts
- ☒ Instream work between July 15 - October 1
- ☐ Bank Stabilization, < 500 ft. length and < 1 cy fill/linear foot
- ☐ Repair/Maintenance with no substantial expansion or change in use
- ☐ Maintenance dredging of less than 1,000 cy with upland disposal
- ☒ No Atlantic Salmon Commission (Norm Dube) concerns in EFH
- ☒ No National Marine Fisheries (Sean McDermott) concerns in EFH

☐ Category II (screening)

- ☐ 4,300 s.f. to 3 acres inland wetland impacts
- ☐ Instream work outside of July 15 - October 1 Corps window
- ☐ Replacement of non-serviceable fills, or repair or maintenance of serviceable fills with expansion of any amount up to 1 acre, or with change in use.
- ☐ Bank Stabilization, exceeding Category 1.
- ☐ < 1 acre Tidal or Navigable waterway fill.
- ☐ < 1 acre Temporary Tidal Marsh impacts
- ☐ < 1000 s.f. of permanent fill to tidal marsh, mudflat, or vegetated shallows.
- ☐ Maintenance dredging greater than 1,000 cy, or new dredging up to 25,000 cy
- ☐ Work within ¼ mile of a Wild and Scenic River
- ☐ Impacts to a vernal pool
- ☐ Instream work in E.F.H. for Atlantic Salmon

☐ Category III (Individual Permit)

- ☐ Replacement of non-serviceable fills, or repair or maintenance of serviceable fills with greater than 1 acre or expansion.
- ☐ > 3 acres inland wetland impacts (>1 acre for new location and/or viable wetlands)
- ☐ > 1 acre of Tidal and Navigable waterway fill
- ☐ > 1000 s.f. of permanent fill to tidal marsh, mudflat, or vegetated shallows.
- ☐ Maintenance dredging any amount affecting special aquatic sites or new dredging greater than 25,000 cy

MDEP NRPA Permit Level

- ☒ Permit by Rule, ☐ Tier 1, ☐ Tier 2, ☐ Tier 3 (Individual)
- Date Applied: 10/23/04 Date Approved: 11/6/04

Wetland Impacts

Inland Wetlands (U.S. Waters: <4300 s.f.

Tidal Waters / Navigable Waters: N/A

Tidal Marsh/Mudflat/Vegetated Shallows: N/A

Fishery Recommendations

ASA: No Atlantic Salmon concerns; defers to IF&W / DMR.

MDMR: No concerns or restrictions; Instream work should be performed during low / no flows.

MDIFW: No concerns or timing restrictions.

NMFS: No EFH concerns.

FEMA: Is there FEMA impact? Yes ☒ No ☐

Coordination with SPO Yes ☒ No ☐

Tribal Letter Sent: N/A**MHPC (Section 106)** Submitted: 9/10/99

Approved: 9/22/99

Requests:**Attachments**

- ☐ MDEP Application
- ☐ Vicinity Map (USGS)
- ☐ Other:
- ☐ 8 ½ " by 11" plan sheets showing affected wetland/waterway areas

Permit No: GP-39

Effective Date: Sept. 29, 2000

Expiration Date: Sept. 29, 2005

Applicant: General Public, State of Maine

**DEPARTMENT OF THE ARMY
PROGRAMMATIC GENERAL PERMIT
STATE OF MAINE**

The New England District of the U.S. Army Corps of Engineers hereby issues a programmatic general permit (PGP) that expedites review of minimal impact work in coastal and inland waters and wetlands within the State of Maine. Activities with minimal impacts, as specified by the terms and conditions of this general permit and on the attached DEFINITION OF CATEGORIES sheets, are either non-reporting (provided required local and state permits are received), or are reporting, to be screened by the Corps and Federal Resource Agencies for applicability under the general permit. This general permit does not affect the Corps individual permit review process or activities exempt from Corps jurisdiction.

Activities Covered: work and structures that are located in, or that affect, navigable waters of the United States (regulated by the Corps under Section 10 of the Rivers and Harbors Act of 1899) and the discharge of dredged or fill material into waters of the United States (regulated by the Corps under Section 404 of the Clean Water Act), and the transportation of dredged material for the purpose of disposal in the ocean (regulated by the Corps under Section 103 of the Marine Protection, Research and Sanctuaries Act).

PROCEDURES:

A. State Approvals

For projects authorized pursuant to this general permit that are also regulated by the State of Maine, the following state approvals are also required and must be obtained in order for this general permit authorization to be valid (applicants are responsible for ensuring that all required state permits and approval have been obtained):

- (a) Maine Department of Environmental Protection (DEP): Natural Resources Protection Act permit, including permit-by-rule and general permit authorizations; Site Location and Development Act permit; and Maine Waterway Development and Conservation Act.
- (b) Maine Department of Conservation: Land Use Regulation Commission (LURC) permit.
- (c) Maine Department of Marine Resources: Lease.
- (d) Bureau of Public Lands, Submerged Lands: Lease.

Note that projects not regulated by the State of Maine (e.g., seasonal floats or moorings) may still be authorized by this general permit.

B. Corps Authorizations : Category I (Non-Reporting)

Work in Maine subject to Corps jurisdiction that meets the definition of Category I on the attached DEFINITION OF CATEGORIES sheets and that meets all of this permit's other conditions, does not require separate application to the Corps of Engineers. If the State or the Corps does not contact the applicant for PBRs and Tier One permits during the State's Tier One 30-day review period, Corps approval may be assumed and the project may proceed. Refer to the Procedures Section at Paragraph E below for additional information regarding screening.

Note that the review thresholds under Category I apply to single and complete projects only (see special condition 5). Also note that Category I does not apply to projects occurring in a component of, or within 0.25 miles up and downstream of the main stem or tributaries of a river segment of the National Wild and Scenic River System (see condition 11, and page 9 for the listed rivers in Maine).

There are also restrictions on other national lands or concerns which must be met in order for projects to be eligible for authorization under this PGP. Refer to special conditions 6-13 under Paragraph F below.

Work that is not regulated by the State of Maine, but that is subject to Corps jurisdiction, is eligible for Corps authorization under this PGP in accordance with the review thresholds and conditions contained herein.

Although Category I projects are non-reporting, the Corps reserves the right to require screening or an individual permit review if there are concerns for the aquatic environment or any other factor of the public interest (see special condition 4 on Discretionary Authority). The Corps review or State/Federal screening process may also result in project modification, mitigation or other special conditions necessary to minimize impacts and protect the aquatic environment as a requirement for PGP approval.

C. Corps Authorization: Category II (Reporting – requiring screening)

APPLICATION PROCEDURES

For projects that do not meet the terms of Category I (see DEFINITION OF CATEGORIES sheets), the Corps, State, and Federal Resource Agencies will conduct joint screening meetings to review applications. If projects are concurrently regulated by the DEP or LURC, applicants do not need to submit separate applications to the Corps. For projects not regulated by DEP or LURC, applicants must submit an application to the Corps Maine Project Office for a case-by-case determination of eligibility under this general permit (Category II). **Category II projects may not proceed until written notification is received from the Corps.**

Category II projects which occur in a component of, or within 0.25 mile up or downstream of the main stem or tributaries of a river segment of the National Wild and Scenic River System, will be coordinated with the National Park Service (see special condition 11, and page 9 for listed rivers in Maine).

There are also restrictions on other national lands or concerns which must be met in order for projects to be eligible for authorization under this PGP. Refer to special conditions 6-14 under Paragraph E below.

Category II applicants shall submit a copy of their application materials to the Maine Historic Preservation Commission and/or applicable Indian tribe(s) at the same time, or before, they apply to the DEP, LURC, or the Corps so that the project can be reviewed for the presence of historic/archaeological resources in the project area that may be affected by the proposed work. **Applications to the DEP or the Corps should include information to indicate that this has been done (applicant's statement or copy of cover letter to Maine Historic Preservation Commission and/or Indian tribe(s)).**

The Corps may require additional information on a case-by-case basis as follows:

- (a) purpose of project;
- (b) 8 1/2" by 11" plan views of the entire property including property lines and project limits with existing and proposed conditions (**legible, reproducible plans required**);
- (c) wetland delineation for the site, information on the basis of the delineation, and calculations of waterway and wetland impact areas (see special condition 2);
- (d) typical cross-section views of all wetland and waterway fill areas and wetland replication areas;
- (e) delineation of submerged aquatic vegetation, e.g., eel grass beds, in tidal waters;
- (f) area, type and source of fill material to be discharged into waters and wetlands, including the volume of fill below ordinary high water in inland waters and below the high tide line in coastal waters;
- (g) mean low, mean high water and high tide elevations in navigable waters;
- (h) limits of any Federal navigation project in the vicinity and State Plane coordinates for the limits of the proposed work closest to the Federal project;
- (i) on-site alternatives analysis (contact Corps for guidance);
- (j) identify and describe potential impacts to Essential Fish Habitat (contact Corps for guidance);
- (k) for dredging projects, include:
 - 1) the volume of material and area in square feet to be dredged below mean high water,
 - 2) existing and proposed water depths,
 - 3) type of dredging equipment to be used,
 - 4) nature of material (e.g., silty sand),

- 5) any existing sediment grain size and bulk sediment chemistry data for the proposed or any nearby projects,
- 6) information on the location and nature of municipal or industrial discharges and occurrences of any contaminant spills in or near the project area,
- 7) location of the disposal site (include locus sheet),
- 8) shellfish survey, and
- 9) sediment testing, including physical, chemical and biological testing. For projects proposing open water disposal, applicants are encouraged to contact the Corps as early as possible regarding sampling and testing protocols.

The Corps may request additional information. Dredging applicants may be required to conduct a shellfish and/or eel grass survey and sediment testing, including physical, chemical and biological testing. Sediment sampling and testing plans should be prepared or approved by the Corps before the samples are collected.

STATE-FEDERAL SCREENING PROCEDURES:

The Corps intends to utilize the application information required by the State for its regulatory program to the maximum extent practicable and the Corps normally will not be interacting with an applicant who is concurrently making application to the DEP or LURC. Projects not regulated by the State, but needing Corps of Engineers approval, **must apply directly to the Corps**. The joint screening meeting for Category II projects will occur regularly at the Corps or State offices and will involve representatives from the DEP, the Corps, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service.

The Corps and Federal Resource Agencies will classify the project within the State's review period, not to exceed 60 days, as: 1) approvable under the PGP as proposed; 2) needs additional information, including possible project modification, mitigation or other special conditions to minimize impacts; or 3) exceeds the terms or conditions of the PGP, including the minimal effects requirement, and an individual permit review will be required. In addition, the Corps retains the ability to exercise its discretionary authority and require an individual permit, irrespective of whether the terms and conditions of this general permit are met, based on concerns for the aquatic environment or any factor of the public interest (see special condition 4 on Discretionary Authority). All Category II projects must receive written approval from the Corps before work can proceed. If the project is not approvable as proposed, the DEP, LURC, or the Corps will contact the applicant to discuss the concerns raised. If the applicant is unable to resolve the concerns, the Corps, independently or at the request of the Federal Resource Agencies, will require an individual permit for the project. The applicant will be notified of this in writing, along with information about submitting the necessary application materials. The comments from the Federal Resource Agencies to the Corps may be verbal initially, and must be made within 10 working days of the screening meeting. These comments must be confirmed in writing within 10 calendar days of the verbal response if the Resource Agency(ies) will request an individual permit. The Federal Resource Agency's comments must reflect a concern within their area of expertise, state the species or resources that could be impacted by the project, and describe the impacts that either individually or cumulatively will be more than minimal.

MINERALS MANAGEMENT SERVICE (MMS) REVIEW

For Category II projects which involve construction of solid fill structures or discharge of fills along the coast which may extend the coastline or baseline from which the territorial sea is measured, coordination between the Corps and Minerals Management Service (MMS), Continental Shelf (OCS) Survey Group, will be needed (pursuant to the Submerged Lands Act, 43 U.S.C., Section 1301-1315, 33 CFR 320.4(f)). During the screening period, the Corps will forward project information to MMS for their review. MMS will coordinate their determination with the Department of the Interior (DOI) Solicitor's Office. The DOI will have 15 calendar days from the date MMS is in receipt of project information to determine if the baseline will be affected. No notification to the Corps within 15 day review period will constitute a "no affect" determination. Otherwise, the solicitor's notification to the Corps may be verbal but must be followed with a written confirmation within 10 business days from the date of the verbal notification. This procedure will be eliminated if the State of Maine provides a written waiver of interest in any increase in submerged lands caused by a change in the baseline resulting from solid fill structure or fills authorized under this general permit.

D. Corps Authorization: Category III (Individual Permit)

Work that is in the INDIVIDUAL PERMIT category on the attached DEFINITION OF CATEGORIES sheets, or that does not meet the terms and conditions of this general permit, will require an application for an individual permit from the Corps of Engineers (see 33 CFR Part 325.1). The screening procedures outlined above will only serve to delay project review in such cases. The applicant should submit the appropriate application materials (including the Corps application form) at the earliest possible date. General information and application forms can be obtained at (207) 623-8367 (Maine Field Office), (800) 343-4789, or (800) 362-4367 in Massachusetts. Individual water quality certification and coastal zone management consistency concurrence will be required from the State of Maine before Corps permit issuance.

E. Programmatic General Permit Conditions:

The following conditions apply to activities authorized under the PGP, including all Category I (non-reporting) and Category II (reporting – requiring screening) activities:

GENERAL REQUIREMENTS:

1. **Other Permits.** Authorization under this general permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
2. **Applicability of this general permit shall be evaluated with reference to Federal jurisdictional boundaries.** Applicants are responsible for ensuring that the boundaries used satisfy the federal criteria defined at 33 CFR 328-329.
3. **Minimal Effects.** Projects authorized by this general permit shall have minimal individual and cumulative adverse environmental impacts as determined by the Corps.

4. **Discretionary Authority.** Notwithstanding compliance with the terms and conditions of this permit, the Corps of Engineers retains discretionary authority to require review for an individual permit based on concerns for the aquatic environment or for any other factor of the public interest. This authority is invoked on a case-by-case basis whenever the Corps determines that the potential consequences of the proposal warrant individual review based on the concerns stated above. This authority may be invoked for projects with cumulative environmental impacts that are more than minimal or if there is a special resource or concern associated with a particular project that is not already covered by the remaining conditions of the PGP and that warrants greater review.

Whenever the Corps notifies an applicant that an individual permit may be required, authorization under this general permit is void and no work may be conducted until the individual Corps permit is obtained or until the Corps notifies the applicant that further review has demonstrated that the work may proceed under this general permit.

5. **Single and Complete Projects.** This general permit shall not be used for piecemeal work and shall be applied to single and complete projects. All components of a single project and/or all planned phases of multi-phased projects shall be treated together as constituting one single and complete project (e.g., subdivisions should include all work such as roads, utilities, and lot development). This general permit shall not be used for any activity that is part of an overall project for which an individual permit is required.

NATIONAL CONCERNS:

6. **St. John/St. Croix Rivers.** This covers work within the Saint John and Saint Croix River basins that requires approval of the International Joint Commission. This includes any temporary or permanent use, obstruction or diversion of international boundary waters which could affect the natural flow or levels of waters on the Canadian side of the line, as well as any construction or maintenance of remedial works, protective works, dams, or other obstructions in waters downstream from boundary waters when the activity could raise the natural level of water on the Canadian side of the boundary.
7. **Historic Properties.** Any activity authorized by this general permit shall comply with Section 106 of the National Historic Preservation Act. Information on the location and existence of historic resources can be obtained from the Maine Historic Preservation Commission and the National Register of Historic Places. Federally recognized tribes (Penobscots, Passamaquoddys, Micmacs, and Maliseets) may know of the existence of other sites that may be of significance to their tribes. See page 14 for historic properties contacts.

Applicants with projects which will undergo the screening process (Category II) shall submit a copy of their application materials, with the name and address of the applicant clearly indicated, to the Maine Historic Preservation Commission, 55 Capitol Street, State House Station 65, Augusta, Maine 04333, and to the applicable tribe(s) to be reviewed for the presence of historic and/or archaeological resources in the permit area that may be affected by the proposed work. The Corps will then be notified by the Commission and/or

Tribe within 10 days if there are State and/or tribal concerns that the proposed work will have an effect on historic resources. The applicant should include with their application to the State or the Corps either a copy of their cover letter or a statement of having sent their application material to the Commission and Tribe(s).

If the permittee, either prior to construction or during construction of the work authorized herein, encounters a previously unidentified archaeological or other cultural resource, within the area subject to Department of the Army jurisdiction, that might be eligible for listing in the National Register of Historic Places, he/she shall stop work and immediately notify the District Engineer and the Maine Historic Preservation Commission and/or applicable Tribe(s).

8. **National Lands.** Activities authorized by this general permit shall not impinge upon the value of any National Wildlife Refuge, National Forest, or any area administered by the National Park Service.
9. **Endangered Species.** No activity is authorized under this general permit which
 - may affect a threatened or endangered species or a species proposed for such designation as identified under the Federal Endangered Species Act (ESA),
 - is likely to destroy or adversely modify the critical habitat or proposed critical habitat of such species,
 - would result in a 'take' of any threatened or endangered species of fish or wildlife, or
 - would result in any other violation of Section 9 of the ESA protecting threatened or endangered species of plants.

Applicants shall notify the Corps if any listed species or critical habitat, or proposed species or critical habitat, is in the vicinity of the project and shall not begin work until notified by the District Engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized. Information on the location of threatened and endangered species and their critical habitat can be obtained from the U.S. Fish and Wildlife Service and National Marine Fisheries Service (addresses attached, page 14).

10. **Essential Fish Habitat.** As part of the PGP screening process, the Corps will coordinate with the National Marine Fisheries Service (NMFS) in accordance with the 1996 amendments to the Magnuson-Stevens Fishery and Conservation Management Act to protect and conserve the habitat of marine, estuarine and anadromous finfish, mollusks, and crustaceans. This habitat is termed "essential fish habitat (EFH)", and is broadly defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Applicants may be required to describe and identify potential impacts to EFH based upon the location of the project, the activity proposed, and the species present. Conservation recommendations made by NMFS will normally be included as a permit requirement by the Corps. Information on the location of EFH can be obtained from the NMFS regulations (50 CFR Part 600) (address listed on page 14) and on their web site (<http://www.nero.nmfs.gov/ro/doc/webintro.html>).

The EFH designation for Atlantic salmon includes all aquatic habitats in the watershed of the following rivers and streams, including all tributaries to the extent that they are currently or were historically accessible for salmon migration:

St. Croix River	Pleasant River	Union River
Boyden River	Narraguagus River	Ducktrap River
Dennys River	Tunk Stream	Sheepscot River
Hobart Stream	Patten Stream	Kennebec River
Aroostook River	Orland River	Androscoggin River
East Machias River	Penobscot River	Presumpscot River
Machias River	Passagassawaukeag River	Saco River

11. **Wild and Scenic Rivers**. Any activity that occurs in a component of, or within 0.25 mile up or downstream of the main stem or tributaries of a river segment of the National Wild and Scenic River System, **must be reviewed by the Corps under the procedures of Category II of this general permit regardless of size of impact**. This condition applies to both designated wild and scenic rivers and rivers designated by Congress as study rivers for possible inclusion while such rivers are in an official study status. The Corps will consult with the National Park Service (NPS) with regard to potential impacts of the proposed work on the resource values of the Wild and Scenic River. The culmination of this coordination will be a determination by the NPS and the Corps that the work: (1) may proceed as proposed; (2) may proceed with recommended conditions; or (3) could pose a direct and adverse effect on the resource values of the river and an individual permit is required. If preapplication consultation between the applicant and the NPS has occurred whereby the NPS has made a determination that the proposed project is appropriate for authorization under this PGP (with respect to wild and scenic river issues), this determination should be furnished to the Corps with submission of the application. The address of the NPS can be found on Page 14 of this permit. *National Wild/Scenic Rivers System (Designated River in Maine) as of 5/2/00: Allagash River beginning at Telos Dam continuing to Allagash checkpoint at Eliza Hole Rapids, approximately 3 miles upstream of the confluence with the St. John River. Length = 92 miles*
12. **Federal Navigation Project**. Any structure or work that extends closer to the horizontal limits of any Corps navigation project than a distance of three times the project's authorized depth (see attached map following page 16 for locations of these projects) shall be subject to removal at the owner's expense prior to any future Corps dredging or the performance of periodic hydrographic surveys.
13. **Navigation**. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.

The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure

or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

14. **Federal Liability.** In issuing this permit, the Federal Government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest; (c) damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit; (d) design or construction deficiencies associated with the permitted work; (e) damage claims associated with any future modification, suspension, or revocation of this permit.

MINIMIZATION OF ENVIRONMENTAL IMPACTS:

15. **Minimization.** Discharges of dredged or fill material into waters of the United States shall be avoided and minimized to the maximum extent practicable, regardless of review category.
16. **Work in Wetlands.** Heavy equipment working in wetlands shall be avoided if possible, and **if required, shall be placed on mats or other measures taken** to minimize soil and vegetation disturbance. Disturbed areas in wetlands shall be restored to preconstruction contours and conditions upon completion of the work.
17. **Temporary Fill.** Temporary fill in waters and wetlands authorized by this general permit (e.g., access roads, cofferdams) shall be properly stabilized during use to prevent erosion. Temporary fill in wetlands shall be placed on geotextile fabric laid on existing wetland grade. Temporary fills shall be disposed of at an upland site, suitably contained to prevent erosion and transport to a waterway or wetland. Temporary fill areas shall be restored to their approximate original contours but not higher. No temporary fill shall be placed in waters or wetlands unless specifically authorized by the Corps.
18. **Sedimentation and Erosion Control.** Adequate sedimentation and erosion control management measures, practices and devices, such as phased construction, vegetated filter strips, geotextile silt fences or other devices, shall be installed and properly maintained to reduce erosion and retain sediment on-site during and after construction. They shall be capable of preventing erosion, of collecting sediment, suspended and floating materials, and of filtering fine sediment. These devices shall be removed upon completion of work and the disturbed areas shall be stabilized. The sediment collected by these devices shall be removed and placed at an upland location in a manner that will prevent its later erosion into a waterway or wetland. All exposed soil and other fills shall be permanently stabilized at the earliest practicable date.

19. **Waterway Crossings.**

- (a) All temporary and permanent crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, and to not obstruct the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.
- (b) Temporary bridges, culverts, or cofferdams shall be used for equipment access across streams (NOTE: areas of fill and/or cofferdams must be included in total waterway/wetlands impacts to determine applicability of this general permit).
- (c) For projects that otherwise meet the terms of Category I, instream construction work shall be conducted during the low flow period July 15 - October 1 in any year. Projects that are not to be conducted during that time period are ineligible for Category I and shall be screened pursuant to Category II, regardless of the waterway and wetland fill and/or impact area.

20. **Discharge of Pollutants.** All activities involving any discharge of pollutants into waters of the United States authorized under this general permit shall be consistent with applicable water quality standards, effluent limitations, standards of performance, prohibitions, and pretreatment standards and management practices established pursuant to the Clean Water Act (33 U.S.C. 1251) and applicable state and local laws. If applicable water quality standards, limitations, etc., are revised or modified during the term of this permit, the authorized work shall be modified to conform with these standards within six months of the effective date of such revision or modification, or within a longer period of time deemed reasonable by the District Engineer in consultation with the Regional Administrator of the Environmental Protection Agency. Applicants may presume that state water quality standards are met with issuance of the 401 Water Quality Certification.

21. **Spawning Areas.** Discharges into known 1) fish and shellfish spawning or nursery areas; and 2) amphibian and waterfowl breeding areas, during spawning or breeding seasons shall be avoided, and impacts to these areas shall be avoided or minimized to the maximum extent practicable during all times of year.

22. **Storage of Seasonal Structures.** Coastal structures such as pier sections and floats that are removed from the waterway for a portion of the year shall be stored in an upland location located above mean high water and not in tidal marsh.

23. **Environmental Values.** The permittee shall make every reasonable effort to carry out the construction or operation of the work authorized herein in a manner so as to maintain as much as is practicable, and to minimize any adverse impacts on, existing fish and wildlife and natural environmental values.

24. **Protection of Vernal Pools.** Impacts to uplands in proximity (within 500 feet) to the vernal pools referenced in DEFINITIONS OF CATEGORIES shall be minimized to the maximum extent possible.

PROCEDURAL CONDITIONS:

25. **Cranberry Development Projects.** For Cranberry development projects authorized under the PGP, the following conditions apply:
1. If a cranberry bog is abandoned for any reason, the area must be allowed to convert to natural wetlands unless an individual permit is obtained from the Corps of Engineers allowing the discharge of fill for an alternate use.
 2. No stream diversion shall be allowed under this permit.
 3. No impoundment of perennial streams shall be allowed under this permit.
 4. The project shall be designed and constructed to not cause flood damage on adjacent properties.
26. **Inspections.** The permittee shall permit the District Engineer or his authorized representative(s) to make periodic inspections at any time deemed necessary in order to ensure that the work is being performed in accordance with the terms and conditions of this permit. The District Engineer may also require post-construction engineering drawings for completed work, and post-dredging survey drawings for any dredging work. **To facilitate these inspections, the attached work notification form should be filled out and returned to the Corps for all Category II projects.**
27. **Maintenance.** The permittee shall maintain the work or structures authorized herein in good condition, including maintenance, to ensure public safety. Dredging projects: note that this does not include maintenance of dredging projects. Maintenance dredging is subject to the review thresholds described on the attached DEFINITION OF CATEGORIES sheets and/or any conditions included in a written Corps authorization.
28. **Property Rights.** This permit does not convey any property rights, either in real estate or material, or any exclusive privileges, nor does it authorize any injury to property or invasion of rights or any infringement of federal, state, or local laws or regulations. **If property associated with work authorized by the PGP is sold, the PGP authorization is automatically transferred to the new property owner. The new property owner should provide this information to the Corps in writing. No acknowledgement from the Corps is necessary.**
29. **Modification, Suspension, and Revocation.** This permit may be either modified, suspended, or revoked, in whole or in part, pursuant to the policies and procedures of 33 CFR 325.7 and any such action shall not be the basis for any claim for damages against the United States.
30. **Restoration.** The permittee, upon receipt of a notice of revocation of authorization under this permit, shall restore the wetland or waterway to its former condition without expense to the United States and as directed by the Secretary of the Army or his authorized representative. If the permittee fails to comply with such a directive, the Secretary or his designee may restore the wetland or waterway to its former condition, by contract or otherwise, and recover the cost from the permittee.

31. **Special Conditions.** The Corps, independently or at the request of the Federal Resource Agencies, may impose other special conditions on a project authorized pursuant to this general permit that are determined necessary to minimize adverse environmental effects or based on any other factor of the public interest. Failure to comply with all conditions of the authorization, including special conditions, will constitute a permit violation and may subject the permittee to criminal, civil, or administrative penalties or restoration.
32. **False or Incomplete Information.** If the Corps makes a determination regarding the eligibility of a project under this permit and subsequently discovers that it has relied on false, incomplete, or inaccurate information provided by the permittee, the permit shall not be valid and the government may institute appropriate legal proceedings.
33. **Abandonment.** If the permittee decides to abandon the activity authorized under this general permit, unless such abandonment is merely the transfer of property to a third party, he/she must restore the area to the satisfaction of the District Engineer.
34. **Enforcement cases.** This general permit does not apply to any existing or proposed activity in Corps jurisdiction associated with an on-going Corps of Engineers or Environmental Protection Agency enforcement action until such time as the enforcement action is resolved or the Corps determines that the activity may proceed independently without compromising the enforcement action. The Corps may choose not to accept applications or issue permits to any applicant with outstanding violations.
35. **Emergency situations.** This PGP can be used to authorize the repair, rehabilitation, or replacement of those structures destroyed by storms, floods, fire or other discrete unexpected and catastrophic event. In such situations and if the work exceeds Category I limitations, if applicant applies to the Corps within 30 days of the event, the Corps will attempt to contact the resource agencies for their approvals but, if unable to contact them, will issue an emergency permit and review them after-the-fact with the agencies at the next joint processing meeting. Proposed work submitted more than 30 days after the emergency will go through the standard PGP procedures.

DURATION OF AUTHORIZATION/GRANDFATHERING:

36. **Duration of Authorization.** Activities authorized under this general permit that have commenced (i.e., are under construction) or are under contract to commence in reliance upon this authorization will remain authorized provided the activity is completed within twelve months of the date of the general permit's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.2 (e)(2). Activities completed under the authorization of the general permit that was in effect at the time the activity was completed will continue to be authorized by the general permit.

37. Previously Authorized Activities.

- (a) Activities which have commenced (i.e., are under construction or are under contract to commence) prior to the issuance date of this general permit, in reliance upon the terms and conditions of the non-reporting category of the previous Maine PGP shall remain authorized provided the activity is completed within twelve months of the date of issuance of this general permit, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with special condition 4. The applicant must be able to document to the Corps satisfaction that the project was under construction or contract by the appropriate date.
- (b) Projects that have received written verification or approval from the Corps, based on applications made to the Corps prior to issuance of this general permit, for the previous Maine SPGP and PGP, Nationwide permits, regional general permits, or letters of permission shall remain authorized as specified in each authorization.
- (c) This general permit does not affect activities authorized pursuant to 33 CFR Part 330.3 (activities occurring before certain dates).

{PRIVATE}DISTRICT
ENGINEER_____

DATE_____

CONTACTS FOR MAINE PROGRAMMATIC GENERAL PERMIT:

U.S. Army Corps of Engineers
Maine Project Office
675 Western Avenue #3
Manchester, Maine 04351
207-623-8367
Fax # 207-623-8206

Federal Endangered Species
U.S. Fish and Wildlife Service
Maine Field Office
1033 South Main Street
Old Town, Maine 04468
207-827-5938
Fax # 207-827-6099

Wild and Scenic Rivers
National Park Service
North Atlantic Region
15 State Street
Boston, MA 02109
617-223-5203

Maine Historic Preservation Commission
55 Capitol Street
State House Station 65
Augusta, Maine 04333
207-287-2132
Fax # 207-287-2335

Aroostook Band of Micmacs
P.O. Box 772
Presque Isle, Maine 04769
207-764-1972
Fax # 207-764-7667

Passamaquoddy Tribe of Indians
Pleasant Point Reservation
Attn: Tribal Council
P.O. Box 343
Perry, Maine 04667
207-853-2600
Fax # 207-853-6039

*Federal Endangered Species and Essential
Fish Habitat*
National Marine Fisheries Service
One Blackburn Drive
Gloucester, Massachusetts 01939
978-281-9102
Fax # 978-281-9301

Houlton Band of Maliseet Indians
Attn: Brenda Commander, Tribal Chief
Route 3 – Box 450
Houlton, Maine 04730
207-532-4273
Fax # 207-532-2660

Passamaquoddy Tribe of Indians
Indian Township Reservation
Attn: Donald Soctomah
P.O. Box 301
Princeton, Maine 04668
207-796-2301
Fax # 207-796-5256

Penobscot Indian Nation
Richard Hamilton, Chief
6 River Road
Indian Island Reservation
Old Town, Maine 04468
(207) 827-7776
Fax # 207-827-1137

*Maine Department of Environmental Protection
(For State Permits and Water Quality
Certifications)*

Natural Resources Division
Bureau of Land and Water Quality Control
State House Station 17
Augusta, Maine 04333
207-287-2111

Southern Maine Regional Office
312 Canco Road
Portland, Maine 04103
201-822-6300

Eastern Maine Regional Office
106 Hogan Road
Bangor, Maine 04401
207-941-4570

Northern Maine Regional Office
1235 Central Drive
Skyway Park
Presque Isle, Maine 04769
207-764-0477

*Maine Land Use Regulation Commission (LURC)
offices*

22 State House Station
Augusta, ME 04333-0022
207-287-2631
800-452-8711 (call to obtain appropriate LURC
office)
Fax # 207-287-7439

45 Radar Road
Ashland, ME 04732-3600
207-435-7963
Fax # 207-435-7184

Lakeview Drive
P.O. Box 1107
Greenville, ME 04441
207-695-2466
Fax # 207-695-2380

191 Main Street
East Millinocket, ME 04430
207-746-2244
Fax # 207-746-2243

(For CZM Determinations)

State Planning Office
Coastal Program
184 State Street
State House Station 38
Augusta, Maine 04333
207-287-1009

*Maine Department of Marine Resources
(For Aquaculture Leases)*
McKown Point
Boothbay Harbor, Maine 04575
207-633-9500

(For Submerged Lands Leases)

Maine Department of Conservation
Bureau of Parks and Lands
22 State House Station
207-287-3061

A. INLAND WETLANDS (WATERS OF THE U.S.)¹	CATEGORY I	CATEGORY II	INDIVIDUAL PERMIT
(a) NEW FILL/ EXCAVATION DISCHARGES	<p>Less than 4,300 sf inland waterway and/or wetland fill and secondary impacts (e.g., areas drained, flooded or cleared).</p> <p>-- Includes projects covered by a State Tier One permit with no cumulative impacts over 15,000 sf in inland wetlands from previous permits, unauthorized work, and/or other state permits.</p> <p>--Includes crossing of perennial waterways designated as Essential Fish Habitat (EFH) for Atlantic salmon² if the waterway is crossed with a span and footprints of the span abutments are outside ordinary high water with no more than 4,300 sf of associated wetland impact.</p> <p>--Includes in-stream work of up to 4,300 sf of fill below ordinary high water in waterways not designated as EFH for Atlantic salmon² and performed in accordance with Maine Permit By Rule standards or a LURC permit.</p>	<p>4,300 sf to 3 acres inland waterway and/or wetland fill and secondary impacts (e.g., areas drained, flooded or cleared).</p> <p>--Impact area includes all temporary and permanent fill and excavation discharges except for incidental fallback.</p> <p>--Includes in-stream work, including crossings (other than spanned crossing as described in Category I) with any discharge of fill below ordinary high water in perennial waterways designated as EFH for Atlantic salmon².</p> <p>--Time of year restrictions determined case-by-case.</p>	<p>Greater than 3 acres inland waterway and/or wetland fill and secondary impacts (e.g., areas drained, flooded or cleared).</p> <p>--Impact area includes all temporary and permanent fill and excavation discharges except for incidental fallback³.</p> <p>In-stream work exceeding Category II limits.</p> <p>If EIS required by the Corps.</p>

¹ Waters of the U.S. in inland rivers, streams, lakes, ponds and wetlands.

² Essential Fish Habitat for Atlantic salmon includes all aquatic habitats in the watersheds of the following rivers and streams, including all tributaries to the extent that they are currently or were historically accessible for salmon migration: St. Croix, Boyden, Dennys, Hobart Stream, Aroostook, East Machias, Machias, Pleasant, Narraguagus, Tunk Stream, Patten Stream, Orland, Penobscot, Passagassawaukeag, Union, Ducktrap, Sheepscot, Kennebec, Androscoggin, Presumpscot, and Saco River.

The larger the impacts, the more likely an individual permit will be required. Projects involving widening, expansion or impacts to degraded or low value wetlands between 1-3 acres may be approved under Category II, subject to the Federal screening. The Corps recognizes and endorses the DEP Tier 2 upper thresholds of 1 acre. Compensatory mitigation is likely to be required at this level of impact.

	CATEGORY I	CATEGORY II	INDIVIDUAL PERMIT
(a) NEW FILL/ EXCAVATION DISCHARGES (continued)	<p>--Impact area includes all temporary and permanent fill and excavation discharges except for incidental fallback.</p> <p>--In-stream work limited to July 15-Oct. 1.</p> <p>--This category excludes situations when a vernal pool of any size may be impacted, in accordance with the ME DEP definition of vernal pool⁴.</p> <p>--This category excludes work within ¼ mile of a Wild and Scenic River⁵.</p> <p>--This category excludes dams, dikes, or activities involving water withdrawal or water diversion.</p> <p>--This category excludes work in National Wildlife Refuges.</p>	Proactive restoration projects with any amount of impact can be reviewed under Category II. The Corps, in consultation with State and Federal agencies, must determine that net adverse effects are not more than minimal.	
(b) BANK STABILIZATION PROJECTS	<p>Inland bank stabilization less than 500 ft. long and less than 1 cy fill per linear foot below ordinary high water in ponds, lakes, and waterways not designated as EFH for Atlantic Salmon², provided there is no wetland fill.</p> <p>--In-stream work limited to July 15-October 1.</p>	<p>--Inland bank stabilization in ponds, lakes, and waterways not designated as EFH for Atlantic salmon² which exceeds Category I limits.</p> <p>--Inland bank stabilization of any size below ordinary high water in waterways designed as EFH for Atlantic salmon².</p> <p>--Other stabilization exceeding Category I.</p>	
(c) REPAIR AND MAINTENANCE OF AUTHORIZED FILLS	<p>Repair or maintenance of existing, currently serviceable, authorized fills with no substantial expansion or change in use.</p>	Replacement of non-serviceable fills, or repair or maintenance of serviceable fills with expansion of any amount up to 1 acre, or with a change in use.	Replacement of non-serviceable fills, or repair or maintenance of serviceable fills with greater than 1 acre of expansion.

⁴ Vernal Pool: Naturally-occurring, or intentionally created for the purposes of compensatory mitigation, temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.

⁵ National Wild/Scenic Rivers System (Designated River in Maine): Allagash River beginning at Telos Dam continuing to Allagash checkpoint at Eliza Hole Rapids, approximately 3 miles upstream of the confluence with the St. John River. Length = 92 miles

B. TIDAL WATERS AND NAVIGABLE WATERS⁶	CATEGORY I	CATEGORY II	INDIVIDUAL PERMIT
(a) FILL		<p>Up to 1 acre waterway or wetland fill and secondary impacts (e.g., areas drained, flooded or cleared). Includes temporary and permanent waterway fill.</p> <p>--Temporary tidal marsh impacts up to 1 acre.</p> <p>--Permanent tidal marsh, mudflat, or vegetated shallows⁷ fill up to 1,000 sf.</p> <p>-- Proactive restoration projects with any amount of impact can be reviewed under Cat. II. The Corps, in consultation with State and Federal agencies, must determine that net adverse effects are not more than minimal.</p>	<p>Greater than 1 acre waterway fill and secondary impacts (e.g., areas drained, flooded or cleared). Includes temporary and permanent waterway fill.</p> <p>--Temporary tidal marsh impacts over 1 acre.</p> <p>--Permanent tidal marsh, mudflat, or vegetated shallows⁶ fill over 1,000 sf.</p>
(b) REPAIR AND MAINTENANCE WORK	<p>Repair or maintenance of existing, currently serviceable, authorized structure or fill with no substantial expansion or change in use.</p> <p>--Work must be in same footprint as original structure or fill.</p>	<p>Repair or replacement of any non-serviceable structure or fill, or repair or maintenance of serviceable fills, with expansion of any amount up to 1 acre, or with a change in use.</p>	<p>Replacement of non-serviceable structures or fill or repair or maintenance of serviceable structures or fill with expansion greater than 1 acre.</p>

⁶ Navigable Waters: waters that are subject to the ebb and flow of the tide and Federally designated navigable waters (Penobscott River to Medway, Kennebec River to Moosehead Lake, and the portion of Umbagog Lake in Maine).

⁷ Vegetated Shallows: subtidal areas that support rooted aquatic vegetation such as eelgrass.

	CATEGORY I	CATEGORY II	INDIVIDUAL PERMIT
(c) DREDGING	<p>Maintenance dredging of less than 1,000 cy with upland disposal.</p> <p>--Proper siltation controls used</p> <p>--Limited to work between November 1 and January 15</p> <p>--No impact to special aquatic sites⁸.</p>	<p>Maintenance dredging of greater than 1,000 cy, new dredging of up to 25,000 cy, or projects that do not meet Category I. Disposal includes upland, open water or beach nourishment (above mean high water), only if material is determined suitable.</p>	<p>Maintenance dredging (any amount) in or affecting special aquatic sites⁷.</p> <p>See B(a) above for dredge disposal in wetlands or waters.</p> <p>New dredging greater than 25,000 cy or any amount in or affecting special aquatic sites⁷.</p>
(d) MOORINGS	<p>--Private, non-commercial, non-rental single boat moorings not associated with any boating facility⁹ provided not located in a Federal Navigation Project, there is no interference with navigation, it is not located in vegetated shallows⁶, and it is within ¼ mile of the owner's residence or a public access point¹⁰.</p> <p>--Minor relocation of previously authorized moorings and moored floats consistent with Harbormaster recommendations, provided it is also consistent with local regulations, is not located in vegetated shallows, and does not interfere with navigation.</p>	<p>Moorings that do not meet the terms of Category I (e.g., rental or service moorings) and moorings that meet the terms of Category I that are located in a Federal anchorage.</p>	<p>Moorings within the horizontal limits, or with moored vessels that extend, into the horizontal limits of a Federal Navigation Project, except those in Federal anchorages under Category II.</p>

⁸ Special Aquatic Sites: include wetlands and salt marsh, mudflats, riffles and pools, and vegetated shallows.

⁹ Boating Facilities: facilities that provide, rent, or sell mooring space, such as marinas, yacht, clubs, boat yards, town facilities, dockominiums, etc.

¹⁰ Cannot be at a remote location to create a convenient transient anchorage.

	CATEGORY I	CATEGORY II	INDIVIDUAL PERMIT
(e) PILE-SUPPORTED STRUCTURES AND FLOATS	Reconfiguration of existing authorized docks, provided structures are not positioned over vegetated shallows ⁶ or salt marsh and provided floats are supported off substrate at low tide. No dredging, additional slips or expansion allowed.	Private piers and floats for navigational access to waterway (seasonal and permanent).	Structures, piers or floats that extend, or with docked/moored vessels that extend, into the horizontal limits of a Federal Navigation Project. Structures, including piers and floats, associated with a new or previously unauthorized boating facility ⁸ .
(f) MISCELLANEOUS	<p>--Temporary buoys, markers, floats, etc., for recreational use during specific events, provided they are removed within 30 days after use is discontinued.</p> <p>--Coast Guard approved aids to navigation.</p> <p>--Oil spill clean-up temporary structures or fill.</p> <p>--Fish/wildlife harvesting structures/fill (as defined by 33 CFR 330, App. A-4)</p> <p>--Scientific measurement devices and survey activities such as exploratory drilling, surveying or sampling.</p> <p>--Shellfish seeding (brushing the flats) projects¹¹</p> <p>--Does <u>not</u> include oil or gas exploration and fills for roads or construction pads.</p> <p>--This category excludes work in National Wildlife Refuges.</p>	<p>--Structures or work in or affecting tidal or navigable waters that are not defined under any of the previous headings. Includes, but is not limited to, utility lines, aerial transmission lines, pipelines, outfalls, boat ramps, bridge fills/abutments, etc.</p> <p>--Shellfish/finfish (other than Atlantic salmon), or other aquaculture facilities which are consistent with the Corps revised standard siting requirements and standard permit conditions dated 7/6/94, or as revised.</p>	If EIS required by Corps.

¹¹ Brushing the flats: the placement of tree boughs, wooden lath structures, or small-mesh fencing on mudflats for the purpose of enhancing recruitment of soft-shell clams (*Mya arenaria*).

WORK START NOTIFICATION FORM

(Minimum Notice: Two Weeks before Work Begins)

MAIL TO: U.S. Army Corps of Engineers, New England District
Regulatory Branch
Policy Analysis/Technical Support Section
696 Virginia Road
Concord, Massachusetts 01742-2751

A Corps of Engineers Permit (No. _____) was issued to the permittee. The permit authorized the permittee to _____

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

Telephone Number: (_____) _____ (_____) _____

Proposed Work Dates: Start: _____ Finish: _____

PERMITTEE'S SIGNATURE: _____ **DATE:** _____

PRINTED NAME: _____ **TITLE:** _____

FOR USE BY THE CORPS OF ENGINEERS

PM: _____ Submittals Required: _____

Inspection Recommendation: _____

MITIGATION WORK-START NOTIFICATION FORM
(Minimum Notice: Two Weeks Before Mitigation Work Begins)

MAIL TO: U.S Army Corps of Engineers, New England District
Regulatory Branch
Policy Analysis/Technical Support Section
696 Virginia Road
Concord, Massachusetts 01742-2751

Corps of Engineers Permit No. () was issued to **[insert name of permittee]**. The permit authorized the permittee to **[insert brief description of the authorized work and location]**.

The permit required compensatory mitigation. **[Briefly describe the requirements, including, if applicable, submitting a final mitigation plan and monitoring reports.]**

Those listed below will do the mitigation, including monitoring and remediation if required. They understand the requirements of the permit and the mitigation and monitoring plan.

PLEASE PRINT OR TYPE

Environmental
Consultant/Scientist

Mitigation
Contractor

Name of Person/Firm: _____

Business Address: _____

Telephone Number: () _____ () _____

Proposed Mitigation Work Dates: Start _____ Finish _____

PERMITTEE'S SIGNATURE: _____ **DATE:** _____

PRINTED NAME: _____ **TITLE:** _____

Corps PMs: _____